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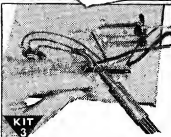
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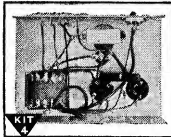
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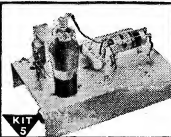
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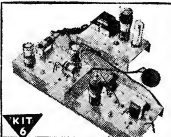
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The

OBSERVATORY

..... by the Editor

BEFORE you read any further in this issue, we want to warn you this isn't just an ordinary issue. You'll find a lot of things are not as they have come to be expected. For instance, you'll find a greatly enlarged Discussions column. This is to make up for short-changing you in this department in the past few months. Next, we are running a story we have no hesitation in calling TRUE. And when we call a story true that deals with a trip to a planet of another solar system 50,000 years ago, you'll admit that's stretching the truth to the breaking point. But, this is not strictly a story of such a trip, it is a story of a true ceremonial adventure which took place in New Mexico this summer, and the ceremony took place exactly as pictured, Oge-Make did walk the Fire-Trail, and when he came back he did tell the story related, and bring the warning to the white man which we have passed on. Every word of this is true. You'll find here one of the most startling and fascinating, and possibly grim articles we have ever presented. And at the end of the story is a plea for your help in the matter of great importance. Do what you can, because you can never chalk up a better good deed to your credit, boy scout or not!

NEXT, we give you three top favorites in this issue. Don Wilcox, with a story he wrote

a long time ago, which doesn't hurt it a bit. It's called "The Rikits of Mars," and you won't mind it being dated a bit when you've finished it. It's typical of Don when he really means business and he usually does. Chester S. Geier brings us an interplanetary (on which the cover painting is based) which is every bit as good as anything he's written. We think you'll like this new one by Geier. He really works harder than any author we know in preparing his scripts. In addition to being a top story, not a comma is misplaced, not a word misspelled in his manuscripts. Rog Phillips gives us one of the most unusual stories we've printed. It's called "Hate," and if you don't know what hate is when you've finished this one, you are out of this world. Nobody could explain anything to you! But Rog has made quite a reputation for unusual yarns, and this one won't hurt that reputation.

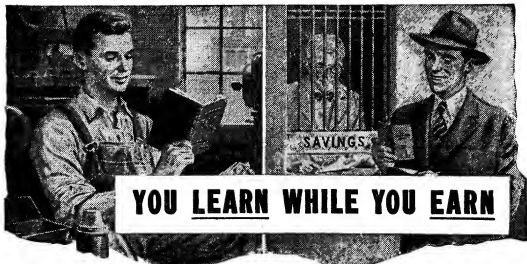
THAT finishes up our stories for this issue, but we've got quite a bit to say about articles. First, Mr. Shaver has been criticized on his theories of inertia and acceleration. Well, he has explained himself in an article, and we think you'll find a few "stumpers" in his article. If you can completely discredit it, you'll be a lot smarter than your editor. He goes a long way with Mr. Shaver on this one!

SCIENTIFIC Mysteries, which we had to drop for a few issues because it seemed we always got tripped on space for it, is back again, and you'll find it as accurate, informative and interesting as ever. We are quite proud of our one-man scientist staff. By the way, Mr. Hansen is making quite a name for himself in his chosen science, and we predict you'll see his name in Who's Who one of these days with some real scientific achievements listed to his credit.

SO MANY readers have written us letters asking questions about Shaver and his stories that we became desperate as how to answer. We have been unable to answer any letters (who could answer 25,000 letters?) but we hate to do such a thing. Then came Robert Paul Kidwell with an article, which we turned into a discussion between him and Shaver. From now

(Continued on page 48)





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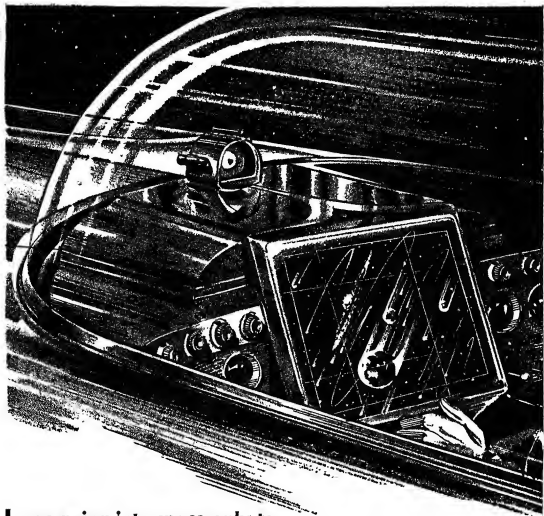
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I was going into space only to test the Starling: I could not dream of the terror awaiting me in the valley of machines

CHAPTER I

The Hour Before Dawn

A TOUCH on my shoulder wakened me. I'd been sleeping lightly, troubled by uneasy dreams, and at the touch I was instantly alert.

The light in my room had been

turned on. I found myself staring into the gaunt, angular features of Professor Alward, who was bending over my bed. A vague, instinctive fear, inspired by my dreams, vanished at the instant of recognition. Alward said:

"Time to get up, Charles. It'll be dawn soon." His eyes were dark-rimmed, his face pale and drawn. He had, apparently, sat up the entire night.

I nodded, swung aside the covers,



FLIGHT of the STARLING

by **CHESTER S. GEIER**

and rose. Alward went to the door. He paused a moment, watching me somewhat anxiously. He still wore the oil-stained coverall in which I remembered seeing him, the day before, when we'd made the last delicate adjustments on the warp generators of the *Starling*, and his graying brown hair hung in disheveled locks over his forehead.

"You feel all right?" he asked.

"I feel fine," I said.

Alward smiled slightly, a little tiredly. "You and Dan are taking a considerable risk, you know. I have a terrible feeling of responsibility. I wouldn't like to have any further dangers added. The principle of the *Starling* looks all right on paper—but under actual operations, who knows what we may have overlooked?"

"I understand," I said. "I wouldn't be doing this if I weren't willing to accept the risks."

"It would help if I were able to go along . . ." Alward shrugged in leaden acceptance of the impossible. "I've already wakened Dan," he said. "You'll find breakfast waiting in the dining room." He nodded at me, and went out.

I began to dress. It was a more detailed process than usual, since I was not to wear ordinary clothes. My garments made up a typical spaceman's outfit. There was a long undersuit, a one-piece, zippered coverall of slate-gray plastolex, with a broad, flaring collar, fitting tightly at wrists and ankles, a pair of short boots with magnetic soles, a short, collarless jacket over which the coverall collar was to be folded, and a soft cap.

Splashing noises and snatches of discordant song came to me from Dan Burdeen's room next door. The blonde giant didn't seem at all concerned at what was to take place at dawn. As for myself, I was excited—and, I shall

have to admit, not a little afraid. Our test flight in the *Starling* would be made under conditions which had never before been attempted by Man. And no one as yet knew fully the dangers attending space travel at speeds approaching that of light. The atomic engines of ordinary space vessels attained only a small fraction of the inconceivable velocity which Alward claimed for the warp-drive of the *Starling*.

I WONDERED, with a sudden ache of anxiety, if Suzanne had anything to do with Burdeen's carefree mood. He'd spent most of the previous afternoon with her, while Alward and I finished our work on the ship. I'd caught a glimpse of them once, at the edge of the lake, talking earnestly. Had some decision, favorable to Burdeen, been made by Suzanne? I thought of this with a wrenching sensation almost like sickness.

I finished dressing, and went out into the hall. I caught sight of Burdeen at the head of the stairs, interrupted by my approach on his way down. He looked me over slowly, and grinned in the superior, taunting way I'd grown to know so well.

"Morning, runt," he said, pretending a great surprise. "So you didn't run away in the night after all, eh?"

Burdeen was six feet and some five inches tall, as handsome and perfectly proportioned as an ancient Greek statue. Considering the fact that I was just an ordinary six-footer, he felt that his advantage in height gave him the privilege to call me a runt.

I said, "Sorry to have disappointed you."

"You'll probably get cold feet and back out yet," Burdeen said.

"Not before you do."

Burdeen eyed me levelly, al-

most grimly. "I never back out," he said, "of anything." And there was a quality in his voice and in his expression which told me as clearly as words that he was referring not only to our coming flight but also to Suzanne.

I think Burdeen misunderstood my intentions regarding Alward's lovely niece, judging them on the basis of his own. I had known Suzanne for almost two years, since coming to work for Alward as his assistant. I hadn't, however, seen as much of her during that time as might have been expected. My work with Alward on the *Starling* had kept me busy the greater part of each day. Driven by the all-consuming fires of his great idea, Alward had permitted few interruptions.

Still, what I had seen of Suzanne convinced me that she was the only girl who would ever matter. Our occasional meetings and conversations were like fragments of a mosaic, meaningless in their individual selves, but making, when joined together, a complete and harmonious pattern. She drew me with the compelling attraction of one who has mutual interests, mutual understandings.

How much of my emotions for the grave, quiet girl were colored by compassion, I do not know. She had been orphaned as a child by the death of her parents in an air accident. And Alward, buried body and mind in his work, had proved a poor substitute. Existence for her had so far meant only a number of different schools and a parade of temporary companions. What she called home was a comfortless place, a sort of beehive of work and speculation over abstract things which she could never quite grasp.

I had never spoken to Suzanne of my feelings. It had never occurred to me that she might even remotely care. I don't think I'd have known how to

talk to her if I'd tried. My background was one of constant work and study. I'd never had a chance to develop any ingratiating social graces. In my relations with others, I felt a shyness and reserve which I'd never been able to overcome.

Burdeen, on the other hand, didn't seem to be under any such handicap. Alward had hired him some two months before, to pilot the *Starling* on its test flight. Burdeen had promptly fallen in love with Suzanne—or at least developed an interest in her which he interpreted as love. Such of his time as was not taken up by study of the operating principle of the ship and the handling of its controls, he spent in her company. I didn't know if Suzanne welcomed his attentions, though I wondered apprehensively at times.

BURDEEN was a typical spaceman, raw and hard, the product of a stern competitive world. He went after what he wanted with a contemptuous disregard for everyone else concerned. According to his code, the winner took all in a fight in which no holds were barred. My role was purely a passive one, but Burdeen chose to see in me a rival for the favor of Suzanne.

Burdeen sensed in my attitude that I'd caught his implied meaning. A derisive grin twisted his lips for an instant before he turned to continue on down the stairs. I followed slowly, conscious of a dull, listless anger.

Alward and Suzanne were seated at the table in the dining room, while Mrs. Svendt, the buxom housekeeper, bustled about with plates of steaming food. Burdeen and I took our places, amid a subdued exchange of greetings, and began to eat.

It was a tense and silent meal. Professor Alward, I noticed, did little more than play meaningless games with his

food, his thin features drawn in a brooding frown. This was for him a crucial point in twelve years of almost constant work. I could understand his emotions. His life-long dream of building an interstellar vessel had, in the *Starling*, taken on material form; but whether or not the ship would prove a success remained yet to be seen. Failure, entailing the loss of twelve years and a sizeable fortune as well, couldn't have been easy for him to contemplate.

I glanced cautiously at Suzanne. Her dark head was bent over her plate, and what I could see of her small face looked troubled and withdrawn. She made an appealing picture of pensive loveliness. She wore a simple dress of dark green synthe-wool, and her hair was done up in the way I liked so well: parted in the center, swept back from the temples, and gathered in a mass of thick, tumbled curls at the nape of her neck. I knew, if she were to return my gaze, that her lashes and brows would be startlingly dark against the pale oval of her face, and that her eyes would be a very clear and disturbing hazel. But she didn't look in my direction.

I found myself wondering if her quietness indicated an anxiety for Burdeen, and possibly—just possibly—for myself. She could have no fears where Professor Alward was concerned, since he was not to accompany us on the test flight. His weak heart wouldn't have been able to bear the strains of acceleration.

An abrupt surge of hopelessness pulled my eyes from Suzanne. I felt a fool for thinking that she might be even slightly worried about me. If she were worried at all, it couldn't be over anyone but Burdeen. Seen through a woman's eyes, the tanned blonde giant, with his laughing blue eyes and carefree grin, was undoubtedly attractive. The

very nature of his profession surrounded him with an aura of adventure and romance. Beside Burdeen, how could I have been noticed? I was just a glamorous physicist, scholarly, serious, and physically quite unimpressive.

Somehow or other, we got through the meal. I ate—but what I ate might have been just so much ashes for all the notice I paid it.

Alward sat back in his chair, and without any perceptible break in his musing, lighted his pipe. Suzanne glanced suddenly around the table, a little confused, as though she had forgotten where she was. She murmured an excuse, rose, and strode into the living room. With a grin of delight, Burdeen rose hastily to follow her.

ALWARD and I were alone. I lighted a cigarette and puffed at it abstractedly, thinking of dawn and of Suzanne. After a while, Alward spoke. "Charles."

"Yes?" I said, jerking my reluctant mind back to reality.

"Everything's all right, isn't it?"

"I'm sure everything is all right, sir. Our check-up yesterday was thorough enough."

Alward passed a hand wearily over his face. He said slowly, "I've thought of this moment for years. I was sure I had everything all planned out, beyond the faintest possibility of error. And now . . . I'm not sure. Now that the actual test is to begin, I feel that I created something too big for understanding or certainty."

"You're tired, sir," I said. "The ship will work."

"You understand everything you are to do?"

I nodded. Alward pulled reflectively at his pipe for some seconds. Then he said:

"It's almost dawn. I've thought of

a slight change in course which I'd like to discuss with Dan before you leave." Some of Alward's old energy seemed to flow back into him. He rose and went to the living room entrance. I heard him call Burdeen.

Burdeen's voice answered, and Alward explained his idea. Burdeen's tone grew a trifle sharp.

"That will have to be put on the flight charts—and they're all in the hangar."

"We'll go there, then. It's almost time to leave anyway."

Alward turned and strode from the room, obviously on his way to the hangar. After a moment, Burdeen followed, visibly annoyed. It was tacitly understood that I was to accompany them, but for some obscure yet irresistible reason, I hung back. I heard the measured thuds of their feet on the porch outside, and then, faintly, the scrape of their soles on the gravel path which led to the hangar. Then there was silence.

I knew suddenly why I had remained behind. I turned slowly back to face the living room entrance, thinking abruptly, aching, of Suzanne. And as though in answer to my thoughts, the figure of the girl appeared without warning in the entrance.

I stared at her—guiltily. Her hazel eyes widened on my face, and one small hand crept to her throat. We gazed at each other for a long moment, with a lack of sound or motion that was oddly unreal, dreamlike. Finally Suzanne said:

"Why, Charles, I thought you had gone."

"I . . . I just wanted to say good-bye."

"But you'll be back, won't you?"

" . . . Yes." I looked away, with an embarrassed feeling, as though I'd just done something foolish.

There was a rustle of motion, and suddenly I felt Suzanne's hands on my arms. The delicate oval of her face seemed dilated with fear.

"Charles—you don't think there's a chance that . . . that you might not come back?"

"We'll be back. Dan will come back. There's really no danger."

Her fingers tightened momentarily on my arms. "Oh, Charles! I wasn't thinking of Dan." She sounded impatient, almost angry. But she looked as if she wanted to cry.

I gazed stupidly down at her, pondering a little bewilderedly the implication of her words. Then I understood. And then suddenly, somehow, she was in my arms and my cheek was pressed tightly against her hair, and a kind of roaring silence beat over me and through me in great, slow waves.

After a while I looked at her and said, "But Dan?"

"Forget Dan," she said.

"I . . . I must seem terribly dumb. I never guessed— But I love you, Suzanne. Did you know?"

She shook her head, hazel eyes smiling at me through tears. "I didn't know. I only knew that you were serious and kind . . . the way my father must have been."

"And you love me?"

"Of course."

She was in my arms again. I don't know how long we stood there when I realized that the darkness beyond the encircling windows had grown gray with approaching light.

It was dawn.

CHAPTER II

The Flight

WE WALKED slowly, Suzanne and I, down the steps of the porch, to

the gravel path which led to the hangar. A few faint streaks of rose and gold showed already in the brightening sky to the east. There was the moist, fresh smell of morning in the air, and the surrounding trees loomed vaguely ghost-like in a gray haze. A cold, thin breeze drifted from the dark expanse of the lake.

It was quiet, with the deep quiet of open spaces that I'd grown to love. The house and its grounds were located in a wilderness of trees and hills. They had once been the site of a vacation resort, abandoned when spending vacations in space or on the Moon had become the fad. Considering Alward's desire for secrecy, the spot had been ideal in which to work. Except for the hangar, sheltering the completed *Starling*, he had made few additions or changes.

Suzanne stopped, gazing out over the lake. Her voice came to me after a moment, low and faintly bitter.

"It happened—but so late. Why didn't we make it happen before?"

"It happened anyway, Suzanne."

"I'm thinking of the flight, Charles. I'm afraid."

"There's nothing to be afraid of. The ship will work. I helped build it. I understand it. I know it will work."

She swung around to face me. "You'll come back?"

"I'll come back, Suzanne. I won't let anything stop me."

"I'll be waiting . . ."

I took her in my arms and held her tightly a moment. Then I released her slowly and said:

"I have to go."

"Yes," she said. "You have to go."

The hangar lights had been turned on. Alward and Burdeen stood near the open entrance port of the *Starling*. They had obviously just finished their discussion.

Burdeen's blue gaze narrowed slightly as he saw me with Suzanne. Then he grinned as though dismissing it as insignificant, and strode forward. He spoke to Suzanne, ignoring me.

"I'm glad you came. You're just in time to see us off."

Suzanne nodded gravely. "Good-bye, Dan. And good luck." She made no move of invitation, but Burdeen bent suddenly and kissed her.

I said nothing. For the first time since I'd known him, I felt a little sorry for Burdeen.

Suzanne turned to me, touching my arm. "Good-bye, Charles." Her eyes told me that our previous farewell, beyond the need for any further demonstrations, was a secret we would share.

I said, "Good-bye, Suzanne." Then Burdeen and I shook Alward's hand and waited while he and the girl walked back to the house. It wouldn't have been safe for them to remain in the hangar when the ship took off.

Finally they were gone. Burdeen continued to gaze after them, frowning, as though something were puzzling him.

I turned to look at the slim, tapering shape of the *Starling*, gleaming silver-gray under the hangar lights. It had once been an ordinary atomic rocket, a private cruiser model just coming into general use. Alward and I had removed the protruding jet tubes, useless for our purposes, and now its metallic skin stretched sleek and unbroken. Interior changes had also been made. Alward's atomic power driven warp-generators had been substituted for the original atomic engines, and the plan of cabins and passageways had been altered to fit in the new machinery. The ship was just a mere shell of its former self. In the pursuit of our work, Alward and I had stripped it ruthlessly of nonessentials. We had not bothered afterward to restore fully

its previous comforts and luxuries. Since the first flight was to be a short one, few of these were needed anyway.

AS I looked at the ship, a surge of excitement rushed over me with the thought that Burdeen and I stood at last upon the threshold of our adventure. For it was an adventure, as are essentially the steps into the unknown, with their accompanying dangers, taken by all pioneers. We would be the first men in history to travel at a speed close to that of light itself. If we returned, we would see, as a result of the risks we had taken, the dawn of a new era—the era of interstellar travel. That alone outweighed beyond consideration the value we placed upon our respective lives.

The circumstances of the flight itself were simple. We were to circumnavigate the Sun—or at least insofar as following a vast elliptical orbit can be called circumnavigation. It would take some three hours. Only a half-hour of this time would be spent traveling close to light speed. The rest would be consumed in accelerating and decelerating. It would not be an easy flight, since for the greater part of the time Burdeen and I would be subjected to terrific pressures, which our special cushioning seats, with their tremendously powerfully absorbing springs, would alleviate but not entirely nullify.

I became abruptly aware that Burdeen had turned and was watching me. His blue eyes seemed oddly intent, speculative. He studied me a moment longer, then said:

"Well, runt, are you getting in—or have you finally decided to back out?"

"I'd be the last one in the world to provide you with an excuse to back out yourself," I said. I climbed into the ship and made my way to the control room. I was seated in my chair, fas-

tening the wide, thick safety straps, when Burdeen entered.

He dropped into his chair and fumbled for his safety straps. He looked thoughtful. He didn't buckle them about his body immediately, but held them absently, glancing at me. Something was on his mind.

Burdeen said finally, "You're acting pretty cocky, runt."

Anger was a sudden glow inside me. But I managed to speak quietly when I answered.

"Burdeen, this is no time for personalities. We've got a job to do—a job that's bigger than either of us. We aren't going to get it done by airing our spites."

He ignored me. "Listen, runt, I want to know something. Is there anything between you and Suzanne?"

The glow inside me became a hot blaze of fury. "You're damned right there is," I said. "Suzanne loves me. And now, if you have any sense at all, you'll forget about her and start flying this ship."

In a flash of motion, Burdeen leaped out of his chair, and his big fingers closed like the jaws of a steel trap on the front of my jacket.

"You're a liar!" he said. "You're a rotten liar!" His voice was thick, choking.

"You know better than that," I answered evenly. "It's either you or I, if anyone, that Suzanne cares about. And you know very well she hasn't anything for you, but you aren't willing to admit it—not even to yourself."

I was unable to move. It was the safety straps, however, rather than Burdeen's grip which held me powerless. I think he realized this after a moment. He released me with a disdainful jerk of his arm. He said grimly:

"I'm going to have this out with

Suzanne. "We're going to settle this once and for all."

"You'll succeed only in making a fool of yourself," I told him. "Besides, the flight is the only important thing right now. We've delayed long enough."

BURDEEN slowly grew calm. A mask seemed to slide over his face. He dropped back into his chair and completed his initial act of fastening his safety straps. Then he turned his attention to the controls.

It was a truce, an armed truce which would exist until we returned. But remembering Burdeen's secretive expression, I wondered suddenly if he didn't have other plans. I knew he wasn't the sort to give up easily. He wanted Suzanne. I was in the way. And if an "accident" happened to me while we were in space, who would be the wiser? It didn't seem at all a far-fetched idea. I knew the way Burdeen's mind worked.

Further uneasy speculation in this direction was blotted out as I heard the soft hum of the warp generators. The hum deepened. The *Starling* began to move. Easily, gently, it lifted from the floor of the hangar, and at Burdeen's touch on the controls floated through the doorway, into the dawn outside. In the view-plate, tiny but perfect in detail, I saw before the house the figures of Alward and Suzanne. They stared a moment, motionless, as though surprised that the ship had moved. Then they began waving excitedly.

The hum deepened still more, became something felt rather than heard. The scene in the view-plate tilted crazily as Burdeen pointed the nose of the ship toward space. Then in a flash of motion, the trees and hills, and then the green and brown of the land, vanished. There was just the blue of the

sky around us, deep and limitless. We were on our way.

On the forward control panel the chronometer ticked off the first few minutes of our epochal flight. The hum of the generators filled the silence like the vast, deep roar of a distant river. We were riding the warp, hurtling through the atmospheric envelope at an ever-increasing velocity.

I must explain at this point how the ship worked. Greatly limited by the nature of the subject, it cannot be—nor do I intend it to be—a very accurate or illuminating explanation. Only mathematics can give the ultimate, clear picture of Alward's tremendous conception.

Driven by atomic energy, the generators created a force as the generators of the past created electricity. In some respects the force *was* electricity, but it was of a higher energy order, containing inherent magnetic properties in a complete union of a kind only vaguely suggested by the term "electro-magnetic," in which the two forces involved are more or less mutually exclusive, the one giving rise to the other. The force created in the immediate vicinity of the ship a warp in space—a moving warp, which could with fair accuracy be called a ripple in the fabric of space. The ship rode this moving warp or ripple as a surf board rides the moving crest of a wave. The intensity of the force controlled the speed of the warp up to a certain limit.

This is where the full import of Alward's principle enters in. The velocity of light through space is a constant set by the very nature of space itself, in exactly the same manner that the velocity of light through air, glass, or water may be said to be a constant set respectively by the nature of these materials. The velocity of light through space, therefore, is the ultimate velo-

city at which any object—tenuous as light, or solid as a ship—can travel through space. Although, in theory, the propelling power of the force was unlimited, we would not, because of this factor, exceed the speed of light. Nor were we, in actual practice, even to attain it, since the solidity of the ship, in contrast with the tenuity of light, would produce a kind of friction with space that would hold us considerably under light speed. The fact still remained, of course, that we would travel faster than Man had ever traveled before, or ever would travel—in this space.

AS THE acceleration of the *Starling* increased, a giant hand seemed to touch and then to press slowly and inexorably upon my body. The sky, as seen in the view-plate, gradually turned a deep, dark blue. Then it was purple, shading slowly to black, and the stars began to blaze in their full, unobscured magnificence.

Burdeen, reclining in his huge chair, seemed almost at ease, except that his features were set and tense, his eyes darting from the various dials, gauges, and indicators on the control panels to the studs and switches set in the arm of his chair and manipulated by his fingers. Though I could have piloted the ship in an emergency—my purpose in being aboard—I could not but admire him a little now that he was at work. I could overlook for a moment the unpleasantness between us and see him objectively as he was—a pilot, and a good one. Even at controls different from those to which he was accustomed, his touch was deft and sure.

In what seemed only a short time, we were beyond the atmosphere of Earth and in space. There was no color in the view-plate now. There was only the incredibly deep, soft, ut-

ter blackness of the void, strewn and dotted with countless intolerably brilliant pin-points of light.

With the difficulty under the pressing weight of acceleration, I reached a hand to the controls in the arm of my chair, dual with Burdeen's, and turned the dial which would change the scene in the view-plate. The Earth appeared, a tremendous orb, bluish-green and misty with silvery atmospheric haze. It grew visibly smaller as the minutes passed, seeming to shrink in upon itself, and became a great disc that dwindled more and more rapidly. We were already going very fast—faster than any atomic rocket had ever gone—and our speed was still increasing.

The giant's hand of acceleration was pushing me deep into the immensely thick padding of my chair. The absorbing springs were taking most of the relentless pressure, but my body seemed still a weight of tons. I had a trapped, impotent, smothered feeling. How long, I began to wonder anxiously, would it go on? How long could flesh and bone hold out? Would it turn out that our goal of speed was a thing impossible for mere, weak humans to attain?

A fog crept over my eyes, a gray fog tinted with a red haze of pain, and a blackness and numbness began to fill the corners of my mind. I was losing consciousness. But with the faculties still in my grasp, I wondered apprehensively about Burdeen. If he passed out, the ship, unguided, might very well plunge into the Sun, or stray so far into the uncharted vastness of space as to become hopelessly lost.

Burdeen didn't pass out, however, as I learned later. There was a giant's resistance in that giant body of his. And he was, after all, more accustomed to the ordeals of acceleration than myself.

As it developed, I didn't lose consciousness entirely. I managed somehow to keep a kind of fingernail grip on my awareness of things. There were periods which I do not recall clearly, when I seemed to be floating alone in a star-shot darkness with a troubling impression of material things around me, of instruments and machines. It was a kind of semi-state experience on the border-line between sleep and waking.

I DON'T know how much time passed when I gradually became more cognizant of my surroundings. The unutterable, terrific pressure on my body seemed slowly to be easing. And then came the interval when I was fully alert. The pressure slowly lifted, and by degrees a sensation almost of comfort stole over me. I soon found that I could move without difficulty.

I glanced at Burdeen. His face was pale, his eyes sunken and blood-shot. Yet there was an air of indomitable energy about him. He had been shaken, but not bowed.

He returned my gaze after a moment. He smiled thinly and spoke, his voice a mere whisper of sound.

"This is it! We're doing it!"

"We're approaching light speed?"

"Yes. One-hundred and eighty-six thousand miles a second now. Think of it, runt—one-hundred and eighty-six thousand miles a second!" There was awe and exultation in Burdeen's tone.

As we reached our maximum, constant speed, all sense of pressure finally vanished. I was exhausted, with a feeling of soreness in every fibre, but aside from this, my sensations were those ordinarily experienced during free flight in space. There was little indication of our incredible velocity. The stars in the view-plate, to each side of us, remained visually much the same.

Those immediately in front of us, however, showed a noticeable Doppler effect. The Earth was a bright green star far to our rear, and the Sun was an intolerable ball of incandescence off our port side. For very obvious reasons, I didn't attempt a look at the Sun, or otherwise use it as a means of reference.

A little over an hour and a half had passed. The chronometer continued busily to tick off the seconds. It seemed fantastic, even while I knew it was true, to think that each tick of the chronometer measured off a span of over one-hundred and eighty-six thousand miles.

Time passed more slowly as the unbelievable was accepted, digested, and rendered commonplace. Burdeen and I said nothing to each other. He was pressing forward against his safety straps, glancing from the instruments to the view-plate, features intent and hawkish. I was not a little tense myself. Everything seemed to be turning out all right. But would it last?

Minutes that were centuries of nervous strain dragged by. Finally Burdeen reached once more for the controls in the arm of his chair. The crucial, all-important half-hour had past—and safely. We would now begin decelerating for the return to Earth. It was a delicate task. Instead of riding the warp, we would now be using it to slow our speed, in somewhat the same way that a gradually applied brake slows a spinning wheel.

MY EXHAUSTION pulled at me like an insistent hand. I didn't try to resist it. I slumped back into my chair, as far as my safety straps would let me, and closed my eyes. I'd seen everything there was to see on the trip out. And having traveled close to light speed had dulled my interest in

further wonders.

I think I slept. The next thing I knew, Burdeen had me by the arm and was shaking me roughly.

"Gilroy! Wake up! Something has happened!" In his excitement, he forgot to call me runt.

I stared at him, struggling for full alertness, and asked, "What's the matter?"

"The Earth! Look at it."

I turned my eyes in sudden apprehension to the view-plate. The immense bluish-green orb of Earth filled the entire screen. I gazed at it for a moment, perplexed. Nothing seemed to be wrong. It was Earth as it would normally be upon our return.

Then I understood. It was Earth, true enough—but somehow not the same Earth that we had left some three hours previously.

The continents of North and South America were in our field of vision. They were still recognizable, still much the same to casual scrutiny. But a moment's study showed that they had changed. The shapes of the two continents were not the same as I had last seen them. It was as though the oceans had risen, or the land had sunk in spots. And snow covered great areas of their surfaces. The colors were now predominantly white and greenish-brown instead of the brown and green that I remembered.

A thought rose above the clouds of dazed horror which filled my mind. I reached for the view-plate dial, tense with dread at what I might see.

Under my fingers, the scene changed. Space and its countless blazing stars appeared. I stared at them numbly.

I couldn't recognize a single star. The old, familiar constellations were gone. Stars still formed patterns and designs across the ebon background of space, singly and in groups—but none

that I knew. The constellations in the view-plate were different, strange—alien.

I reached for the dial again, turned it slowly. But when the disc of the Sun came into view, it wasn't necessary to shield my eyes. The Sun was a shrunken reddish orb. It looked tired and worn, a little unhappy.

I looked slowly at Burdeen. In his blue eyes was the same question that must have been mirrored in my own.

What had happened to the world and the cosmos we knew?

CHAPTER III

Valley of the Machines

THERE was a long silence, while dismay faded slowly from our minds and the full scope of the mystery to which we had returned began to penetrate. Finally my attention focused once more on the view-plate, and I brought Earth—or what we had known as Earth—back in its field. I think I had the dim hope that a second look would somehow find everything normal. But I was doomed to disappointment.

Burdeen said, "Gilroy . . . you're a scientist. What do you think caused this?"

"I couldn't say for certain just yet," I told him. "I haven't anything to go on. But a good guess would be that it was brought about in some way by traveling close to light speed."

Burdeen looked at the image in the view-plate, and then at me. "I've been thinking about it, Gilroy. Maybe . . . maybe that isn't the Earth at all. Maybe traveling close to light speed threw us out of our own Universe entirely."

"I don't know," I said. "The planet looks a lot like Earth. And if there's a moon. . . ."

"There is," Burdeen said. "I saw it as we circled in."

"Then it must be Earth."

"But the changes—the snow, the stars, the sun . . . ?"

"I don't know," I said again.

There was a silence. After a while Burdeen gestured helplessly and asked:

"Well, what are we going to do? This wasn't in the instructions Alward gave me."

"We might as well do what we intended to do upon our return—land." I shrugged listlessly. "There's no other place to go."

"How about the house—the spot where we took off?"

"We wouldn't be able to find it. Look at the view-plate. The landmarks which were to have guided us back to the house are gone. There's only snow down there—snow and ice. The house is gone, too." I thought abruptly, piercingly, of Suzanne. She had gone with everything else.

Burdeen straightened with returning purpose. "There ought to be people down there somewhere," he said, turning to the controls. "If we can find them, they might be able to help us."

I clutched at the thought. Alward had had the foresight to load aboard a store of emergency provisions. These wouldn't last forever. People meant food and shelter. But what, I wondered, if there were no people?

The ship sped toward the planet at gradually decreasing speed. Burdeen made adjustments on the controls from time to time. Soon the immense sphere was no longer convex, but concave, and its continents began to fill the entire field of vision. We dropped down toward the middle of what had once been North America—or what appeared to resemble it.

Finally we were within a thousand feet or so over the surface and moving

eastward. We watched the view-plate eagerly. But no roads or buildings showed below us. There was only the snow, interspersed with glittering patches of ice, and great forests of what appeared to be firs and pines. The country had all the characteristics which the far North had once shown.

Presently we reached a great city. It didn't seem, from its location, to be Chicago. The city was like no city I had ever known. It was an incredible, sprawling maze of colossal towers, strung level upon level with leaping spans. The towers gleamed metallically in the pale, cold light, unmarred by the storms of countless years.

WE CRUISED slowly over the city for a while, searching for signs of life. But there were none that we could see. From the highest spans, down to the lowest visible levels, nothing moved. The glittering mantle of snow which lay over the city was everywhere smooth and unbroken.

Burdeen said slowly, "It's deserted. Everybody's gone."

"There should be other cities," I said. "They can't all be deserted."

"Where? Further north?"

"No, it's cold there. If any people remain, they would most logically inhabit the warmer, southern regions."

Burdeen nodded, and turned back to the controls. The ship swung around, and soared in the general direction of the Gulf of Mexico. Near the coast, we turned west. Our speed was slowed, and we moved some five-hundred feet above the surface.

The snow was thinner here than toward the north. It covered the ground only in occasional patches. Trees here were profuse in numbers and in variety, and grasses and shrubs carpeted great expanses of the land. But an atmosphere of desertion lay

heavy over everything. It was as though we moved over a wilderness where the feet of Man had never trod. There were no roads. The few houses we saw were so apparently neglected, that we knew people no longer lived in them.

Our discouragement grew as time passed. We were about ready to stop the search when the ship moved over a great rectangular valley. Almost at once we saw the buildings scattered over its floor. The buildings were rather widely scattered, except at one point, approximately in the valley's center, where they were numerous enough to form what seemed to be a small city. The ground bordering the city and between the scattered buildings showed the patchwork effect of soil under cultivation. As we descended for a closer inspection, we saw in the tilled fields glinting, angular shapes that clearly were farming machines. They were in motion, performing obscure tasks among the crops. They seemed to be working without human guidance, for we saw no men anywhere near them.

Burdeen flashed me a grin of joy and relief. I nodded my understanding. Farms and farming machines indicated the presence of people. The valley was inhabited.

Moving very slowly now, we drew over the city. It was very small, more like a town or village, its buildings laid out in a neat geometric pattern. The buildings were white and small, with the classical simplicity of ancient Grecian architecture. The ground between them was arranged and tended with the order and care of a park or garden. Scattered about were what seemed to be numerous statues and fountains. And there were people. They stood about in groups, staring up at the ship in surprise. As we watched, more

came running from the buildings—and others floating through the air. Burdeen and I were startled until we realized that the floating figures had flying apparatus of some sort strapped to their shoulders.

Burdeen glanced at me. "Looks as if it'll be all right to land."

I nodded agreement. "These people are civilized. It isn't likely that they'll make trouble." I realized, suddenly, without feeling much surprise over the fact, that relations between Burdeen and myself were friendlier than at any time since we'd met. It was understandable enough. We shared a common problem. We, each to the other, were the only familiar things in a world where all else had changed. The spites and quarrels of the past had been paled into insignificance by the perplexities and dangers of the present.

Burdeen set the ship down on a broad expanse of lawn before a building that might have been a temple lifted bodily from ancient Athens. Thus ended—or seemed to end at the time—the *Starling's* incredible flight. A little less than eight hours had passed.

Burdeen began to unbuckle his safety straps. "We'll go out and talk to them," he said. "Maybe they can tell us where we are."

WE WERE both very stiff from the long confinement to our chairs, and had to spend a few minutes in limbering up. Then, straightening his jacket and setting his cap at a rakish angle over his blonde hair, Burdeen strode toward the entrance port. I followed after him with turbulent feelings, the most predominating of which seemed to be excitement.

Together, Burdeen and I unsealed the port and pushed it open. The people had gathered in a crowd before the ship. As the port swung out, revealing

us, they drew back, abruptly silent. Amid a deep quiet, Burdeen and I climbed down from the port and to the ground.

I gazed at the nearest of the figures with the same curiosity with which they were staring at me. Oddly enough, the very first impression I received made me think of Burdeen's runt epithet. Applied to me here the term would no longer be one of spite, but of literal accuracy. For the people were all fully as tall, or taller, than Burdeen. The similarity didn't end there, since the majority had blonde hair and a statue-like perfection of features and form. And so many of the staring eyes were blue, that I began to have somewhat the feelings of a stranger at a family reunion. I think I lost at that moment a lot of my incipient friendliness for Burdeen.

The people were simply yet colorfully dressed. They wore long-sleeved tunics, belted at the waist, and falling mid-way to the knees. Their feet were covered with a kind of light boot which moulded snugly to ankles and calves. Over their tunics they wore voluminous, hooded cloaks, or belted, short coats, also hooded. The wearers of this latter type of garment seemed to be those Burdeen and I had glimpsed flying through the air, for criss-crossing straps bound an apparatus of some sort to their shoulders.

The air was cool without being actually cold, and it had the crisp tang which only early morning or autumn air seems to have. A light but steady breeze touched my face, laden with the fresh, clean smell of grass. I could hear the musical gurgling of a nearby fountain, and from somewhere overhead came a flutter of wings from curiously circling birds, with occasional inquiring twitters or trills.

Abruptly, a new sound came. It

was that of a voice, a deep, authoritative voice, raised in a tone of command. A ripple of motion spread through the crowd. The massed figures before Burdeen and myself parted, and a man strode with vigorous self-assurance into the intervening space and came toward us.

He was an old man, but as straight and purposeful as a youth of half his years. He was dressed much like the others, except that his tunic partly visible through the opening in his cloak, fell to his ankles, and a silver chain bearing a medal or badge hung from his neck. The hair beneath his hood was long and white, and his features were finely patrician, grave with the responsibilities of leadership, but without any of its arrogance or stiffness. From blue eyes piercing beneath the snow-drift overhang of white brows, he surveyed first Burdeen and me, and then the gleaming shape of the *Starling* behind us.

A murmur rose from the crowd. I could not distinguish what was said, but one word seemed frequently to be repeated. It was "Julon"—obviously the name of the patriarch who stood before me. And as though the crowd drew courage and confidence from his presence, the murmurs swelled and deepened.

Julon half turned, and his peremptorily lifted hand brought immediate silence. Then he faced Burdeen and me once more. He spoke. What he said was put in the form of a question, but I didn't understand the words. They seemed vaguely familiar, in the way that words in the English of Chaucer would have been familiar, but without essential meaning.

Burdeen glanced at me, his features puzzled. I shook my head to show that my understanding of Julon's question was little better than his own.

JULON seemed to realize that his language was strange to us. He considered a moment, brows furrowed in thought, evidently pondering his next move. Finally he pointed from Burdeen and me to the ship, and waved a hand at the sky.

"He probably wants to know if we came from some place a great distance away," I told Burdeen.

"I guess that can be answered in the affirmative," Burdeen said. "It's true enough." He turned to Julon and nodded emphatically, waving his own hand at the sky.

Julon seemed satisfied. Turning to the grouped people behind him, he spoke a few words of explanation. A stir of excitement ran through the gathering. Voices rose in sudden, eager babble.

Julon attempted a few more questions in sign talk, but the ideas behind them this time were a bit too complex to grasp. He seemed to want to know our purpose in coming to the valley. It would have been too difficult to explain, if that actually was the gist of his inquiries. How could Burdeen and I have made him understand that we had landed in the valley with the vague, desperate hope of finding some way to return to the world we had originally left?

With a smile of resignation, Julon abandoned his efforts. He dismissed the crowd with a few quiet words of command, then indicated that Burdeen and I were to accompany him.

For the first time, I noticed that Julon had a companion, a stalwart, golden-haired young giant who was a younger edition of himself, and apparently his son. Julon laid a hand on the shoulder of the youth and said: "Elvar." It was obviously an introduction.

I smiled and nodded. Pointing to myself, I said: "Charles Gilroy."

Burdeen spoke his own name, his glance at Elvar faintly challenging. They were of a size, and except for a certain classical refinement in Elvar's features, they might easily have been mistaken for brothers. Elvar grinned a trifle self-consciously, acknowledging the introductions with a bow.

Gesturing, Julon finally turned and began to walk briskly toward some point in the spacious, garden-like city. Burdeen and I hesitated only long enough to close and lock the entrance port of the *Starling*, then turned to follow him.

Little groups of people stood everywhere. They fell silent as we passed, glancing at us curiously. They seemed entirely friendly and no more inquisitive than any other people would have been under the same circumstances, but there seemed to be a restrained eagerness about them that puzzled me. The arrival of Burdeen and myself in the valley seemed to mean something to them.

Flying figures passed over us frequently as we strode along. And complex machines of all sizes and shapes, and as far as I could see, uncontrolled, sped smoothly over the grass, bound on mysterious errands. They seemed intelligent in ways I had never guessed a machine could be. A few times, when our progress blocked the path of one, it detoured carefully around us, as though aware of us not merely as obstructions, but as human beings. The machines and the flying figures were oddly jarring notes against the classical atmosphere of the city.

CHAPTER IV

Revelations

WE CAME at last to a small single-storied white house that resem-

bled a temple of some minor diety in ancient Greece. On the steps before the house stood two women. They had apparently been attracted outdoors by the hubbub of the *Starling's* arrival. Both were fully as tall as I, a fact which did little to bolster my already tottering morale.

Introductions were performed again. By means of Julon's sign talk, interspersed with a few spoken words, I learned that the women were Mera and Varis, respectively Julon's wife and daughter. Mera was a kind-faced, matronly woman, with a poised, erect bearing which I can describe only as queenly. And Varis . . . she was too beautiful to be entirely real. She was a vision of flowing golden hair, sea-blue eyes, and gleaming white skin. But even at first glance it was evident that she was no mere exterior shell of feminine perfection. There was flame and spirit in her, and a quick, all-embracing intelligence.

Burdeen stared at Varis with the startled incredulity of one who sees, but is reluctant to believe. She flushed under the intensity of his gaze and looked away. As for myself, I could see in her bright beauty only the grave, dark loveliness of Suzanne—lost to me across the mysterious gulf which the voyage near light speed had placed between us. Thought of Suzanne filled me with a sudden, aching desolation. It didn't seem possible that I would ever see her again.

Julon chuckled tolerantly at Burdeen's fascinated expression and gestured toward the doorway. We strode into the house. The interior was simply, yet comfortably furnished. Deep rugs covered the floors. Large globes hanging from the ceilings shed a clear, steady light on marble walls, broken in places by niches containing statuettes and vases, or hung with rich tap-

estries that glittered metallically. Scattered about were tables and couches, all exquisitely carved and inlaid.

Elvar took Burdeen and me to a room at one side of the house, obviously a kind of sleeping chamber, for the couches here were deep and broad, resembling beds. We took turns in washing in streams of hot and cold water which flowed from opposite sides of a niche in one wall into a deep basin set at waist level. Drying ourselves on thick, soft towels, we followed Elvar to another room, filled with the savory odor of cooked food.

Presently Julon, Mera, and Varis appeared, and the meal began. It was very much like the buffet suppers I had attended once. Each helped himself to food set out on trays before a broad, high cabinet of glass and metal, then, sat down on the couches about the room to eat from the plate which he held on his knees. The cabinet was a highly complex cooking device of some sort. Low bubbling, hissing, and humming sounds drifted from it, and by means almost like magic, it removed used trays of food and set out new ones. I learned later that it prepared and cooked the food entirely by itself, needing only a few spoken directions as to variety and amount. It was kept supplied by still other machines.

The food had an exotic flavor, but it was delicious and satisfying, essentially like the food I've always eaten. Just then, however, I was too hungry to be critical—or very careful about my manners, though the meal was informal enough.

WHEN we had finished, Julon beckoned us to a room which Burdeen and I had seen when first entering the house. It seemed to be the living room. Following the example of the others, we settled ourselves upon

one of the couches and waited expectantly for what was to happen next. There was an unmistakable deliberate air about the proceedings.

Julon strode to a tapestry on the wall and pulled it aside. A large screen was revealed, with an operating mechanism below it, set in the wall. The screen looked much like a television or view-plate screen, but as I was shortly to learn, it didn't quite serve the same purpose.

From a receptacle near the operating mechanism, Julon produced what seemed to be a spool of fine wire. He threaded an end of this into some part of the device, fixed the spool in place on a spindle, and pressed a switch. There was a soft hum. The screen lighted.

In glowing, vivid colors a scene took form. At the same time there was a slow swelling of music. Two lines of men and women dressed in gay costumes faced each other against a vast painted backdrop. The costumes and setting depicted a symbolism which I could not grasp, but the nature of the scene was evident enough, suggesting opera or ballet. As the music rose in volume, the men and women bowed to each other, and then moved together, merging, to separate as couples. A quick, spritely dance began, with the couples gyrating in a pulse-lifting rhythm, forming intricate changing patterns. The music, bright and lilting in tempo, wove the color and movement of the spectacle into a harmonious, fascinating composition.

The settings and the music changed from time to time. Occasionally only one couple danced, and then singing would be featured, solo and chorus. My interest gradually waned as I found myself growing sleepy. I glanced at Burdeen, to note his own reactions. But he was watching Varis, as he had

watched her more or less continually the entire time.

Finally the program ended, the screen darkening, the music fading into silence. Julon rose to drop the tapestry back in place. With a gravely apologetic smile, he indicated that he sensed the weariness of Burdeen and myself, and that we would be excused if we wished, to sleep. We nodded our acceptance. After an exchange of smiles and bows, Elvar led us to the sleeping chamber where earlier we had washed.

Burdeen and I chose our respective beds, removed our coveralls, and lay down, pulling up around ourselves thick warm blankets. Elvar nodded at us and went out, extinguishing the lights. We were alone with our thoughts in the darkness.

After a while Burdeen said: "Gilroy."

"What is it?"

"Have you figured out what happened to us yet?"

"Not yet," I said. "But I have a vague idea. I'd rather not explain it, though, until I'm sure."

"Suppose we have to stay here—for good?"

"We'll just have to make the best of it, I guess."

"Living here wouldn't be so bad."

I said slowly, "Don't you want to go back?"

Burdeen was silent a moment. Then he said, "Yes, I want to go back. This is a nice place—but it isn't our world."

We said nothing more. I fell asleep, thinking, as it seemed I would always think, of Suzanne.

The days that followed were filled with various activities. Burdeen and I were introduced to the other leaders of the people in the valley, who formed a sort of governing council of which Julon was the head. We were taken on tours of the city and to numerous ban-

quets. The others, like Julon, seemed anxious to know the purpose of our visit. It meant something to them that I couldn't grasp. I think it was this lack of understanding on our part, coupled with our inability to explain, that led Julon and his associates to take an extremely important step where Burdeen and I were concerned.

WE WERE taken one morning to a large marble building, which seemed to be a kind of university or school. In the room to which we were led were two chairs, each literally festooned with a bewilderingly complex array of apparatus. By means of gestures, Julon gave us to understand that were to occupy the chairs. He endeavored to make it clear that we were not to be harmed, and that whatever was to take place would be to our advantage.

The apparatus, however, was not reassuring. I surveyed it somewhat anxiously and glanced at Burdeen. He shrugged slightly.

"They're going to do something to us," I whispered. "I don't think it will hurt. Let's give them the benefit of the doubt anyway."

We sat down in the chairs, and two assistants began to fasten various portions of the apparatus about our heads. Metal skullcaps wound with wires were placed over our hair, a kind of ear-phones upon our ears, and over our eyes thick, cumbersome spectacles, through which I could at first see nothing. Finally the touch of hands left us. We waited tensely for what was to happen next.

There was an abrupt hum in my ears, a flash of light and color before my eyes. My head became oddly weightless. My thoughts, as I considered these sensations, seemed strangely keen and vigorous. It was as though

my powers of concentration had been heightened. This, as I learned afterward, was what actually happened, by a process of subduing all superfluous thought and emotion save those concerning matters immediately at hand.

The light before my eyes steadied. The image of a man appeared. Even as I realized this, a word in strange letters appeared below the image, and a word, obviously the same as the written one, was spoken in my ear. The image of the man walked, ran, smiled, became angry, each action being both visually and audially described. And with my increased powers of thought and concentration, I found that I retained a perfect memory of each explanation. I knew that I would be able easily to understand the words if I should ever hear them spoken or see them written.

Additional subjects followed. Animals, houses, trees, and other things of a simple nature. Thus began the education of Burdeen and myself in the language of the people of the valley. As the days passed, we learned quite rapidly. How much of our speedy progress can be credited to the mental aid given by the teaching apparatus, or to our already vague familiarity with the language, is uncertain. Chaucer wouldn't have had much difficulty in learning modern English—even less if he'd had a device to bolster and stimulate his thought processes while learning.

Before long Burdeen and I were able to hold simple conversations with the others. We didn't attempt to question them as yet, nor did they attempt to question us. By a sort of tacit agreement, we were waiting until the time when our vocabularies would be most nearly equal. This would permit a more complete and thorough discussion of the things important to us.

Burdeen and I managed, however, to learn many things through these early conversations. We were still on Earth, not on a planet in some remote corner of the Universe, as we had dimly feared. From the changes which had taken place, it was obvious that a very long time had passed. This bore out the suspicion which I'd held about time being involved somehow in the flight. But how much time was impossible to determine.

The valley and the city were known comprehensively as Ard. The same name applied also to the planet as a whole, but among Julon and his people it applied particularly to the city. The government of Ard was essentially democratic, the councillors and their presiding head being chosen by vote of the people. But life in Ard was so simple and well-ordered that the tasks of government were practically nonexistent. Machines did all the work, produced all the goods. Everyone had everything he needed, and no person had any more than the other.

FREED from labor by the machines, the people of Ard used leisure to excellent advantage. They had made many advances in science and technology. Their music, literature, drama, and art were imaginatively vigorous and distinctly original. They had innumerable mind, body, and character building activities in the way of sports, contests, and hobbies. Their time, in fact, was in every way occupied beneficially.

I had earlier supposed from what I had thought was their reliance upon machines, that the Ardians were sinking gradually into decadence. I had learned that was the fate which usually befell people who were cared for without effort of their own. But far from sinking into decadence, the Ardians

were arising from it.

The machines were not a development of their own. It seems that the machines, like the great empty cities and the planet itself, had always been. The cities and the planet had gradually been deserted. Those who had remained had come to rely too completely upon the machines, and when the machines had stopped, they had lapsed into barbarism. The Ardians, at some time in the distant past, had learned slowly and painfully to repair, start, and operate the machines again. They had not fallen into their old ways, but had used the machines as stepping stones to even greater achievements.

A lot of time had passed, of course, during the period from decline to resurgence. During that time, freed from the bonds of print, the English language had undergone more changes than had taken place throughout the several thousand years preceding. The Ardian tongue had seemed vaguely familiar to me, but no more. The educating apparatus, one of the ancient devices which the Ardians had learned to use along with the others, had naturally been changed to conform to their own dialect. I wondered occasionally how large a role the educating apparatus had played in the Ardian rebirth.

I was a scientist, and these things were interesting to me. I discussed them—haltingly at first, to be sure—with many of the elders in Ard, and particularly with Julon. Talking with Julon made me understand why he had been chosen a leader. His mind was very keen, and he had studied intensively the record-spools of the ancients. He possessed not only an amazingly broad range of knowledge, but the sense of human values and perspectives, coupled with a truly objective attitude, necessary to apply it.

Such of my time as was not spent

under the educating apparatus was passed in this way. I made few friends outside of Julon and the other elders. As for Burdeen, he was occupied in a manner typical of him. He entered zestfully into the sports and physical contests of Ard, natural outlets for his restless, competitive spirit. His great strength and stubborn endurance soon made him the idol of the city's youth. And I noted that he was often with Varis.

Finally the education of Burdeen and myself was completed. It was an event for which Julon had long and impatiently been waiting. After breakfast on the morning of the day following our "graduation", he asked us to accompany him to the garden at the rear of the house. We settled ourselves on a marble bench that circled a small pool.

It was cool, with that crisp tang to the air I'd grown to know so well. It was always cool, even when the reddish sun hung at zenith. There was a light wind. In the surrounding trees birds twittered and chirped quarrelsomely.

JULON glanced slowly at Burdeen, and then at me. He seemed more than ordinarily grave. After a moment he said:

"My friends, there are things which we of Ard have wanted to know ever since your arrival here. But first I shall tell you the reasons, so that you will understand us.

"You have undoubtedly seen the world as it is . . . a waste of snow and ice, for the most part. The world is almost deserted. There are some people left, but these are savages, living in crude houses of wood and skins, or skulking among the crumbling towers of the ancient cities. There are none such as the people of Ard. Our kind is alone in the world—and the world

is growing cold and inhospitable. If our descendants are to advance and grow and become a mighty race, we must leave Ard and find a habitable planet circling a younger, warmer sun.

"In the dim past, men had machines—much like your own machine—in which to travel the vast distances between the stars. That is why the world is deserted now. They found and settled fresh, new planets, and as the old world grew cold, others left one by one to join them. Those who remained depended upon the servant-mechs, and when the servant-mechs broke down, they became savages." Julon looked up at the sky, and his tone became faintly bitter.

"All the available space machines were taken in the exodus. There were many more people, in fact, than there were space machines. That is why some remained behind. It was not of their choosing. A part of them, however, managed to gather the record-spools which explained the construction of space machines. These built the machines they needed and left. But they either took with them or destroyed the all-important record-spools. Subsequently refugees were left stranded. We of Ard wish to leave this world for a new one among the stars, but the means with which to do so is beyond our grasp. We do not know, as did the ancients, how to build space machines.

"Out of our thwarted hopes a legend grew—a legend that some day men would come from the stars to visit the planet of their birth. They would find us of Ard, and would take us to the new world we sought. Or if they could not take us, they would give us the vital secrets of building space machines." Julon gazed at Burdeen and me in sudden, intense appeal. It shocked me a little, for he had always seemed so pro-

found and self-sufficient.

"My friends, it is obvious that you have come from the stars. Now that you know our plight, will you not help us? All we ask is that you teach us to build a space machine like your own, so that we may find a new home—so that what we have started here in Ard will not perish when the sun finally dies."

I glanced in dismay at Burdeen. There was a serious flaw in the *Starling's* warp-line principle. If our short flight had had such an effect upon ourselves, what more serious results might it not have from a voyage across the immense gulf between the stars, as Julon contemplated? And while Burdeen and I knew the construction of space vessels, it was the construction of interplanetary vessels—not of interstellar vessels, which were what Julon had in mind.

Julon saw from our expressions that something was wrong. "What is it?" he asked. "Can you not help us?"

The question could not be avoided. I sighed, regretting the disappointment my words would bring, and launched into an account of the *Starling's* incredible flight.

Julon was silent for a long while after I finished. Then he said dully:

"You have not come from the stars. You have come from this world—the world of long ago."

"And the difficulty is," I answered helplessly, "that we don't even know how. A lot of time has passed. I know that time is involved—but I don't know how."

JULON rested an elbow on his knee and stared at the grass, considering the matter. It was as though the problem of his people were no longer uppermost in his mind. At last he said:

"I have done much studying of the

ancient record-pools. I know many of the things which the ancients knew—and some which they had forgotten or overlooked in the dense growth of new knowledge around them. I think I have the answer to that which puzzles you. It involves an ancient theory—the theory of relativity. The man to whom it is credited is no longer known."

I straightened on the bench, electrified, a name ringing in my mind. The name was Einstein. It was all suddenly very clear to me. I knew what Julon was going to say even as he said it.

"According to the theory of relativity," he went on, "time is a function of the velocity of light. Time, that is to say, is a relative quantity depending on the position of the observer—whether at rest or in motion. In motion, the time interval slows as speed is increased. As the speed of light is approached, time slows so greatly that it becomes negligible.

"But it is all relative. To the observer in motion, it is not apparent that time is passing at a faster rate than that to which he is accustomed. The instruments which measure time move at the usual rate. The bodily processes continue as normal. But—for each tiny interval measured off by the instruments, for each beat of the heart, of the observer in motion, hundreds of years pass with respect to the observer at rest.

"That is what happened to you, my friends. During the half hour while you traveled at a speed near that of light, many thousands of years passed here, upon the slower moving world."

I sat as though frozen, stunned into immobility. How could Alward and I possibly have overlooked that fact? It seemed too fantastic for belief—but we had. I can only explain it this way.

The theory of relativity was old when Alward and I built the *Starling*. It had been buried amid a welter of others on the nature of time and space which had arisen through the years. And the work on the *Starling* had been so complicated and exhausting that we had been able to think of nothing beyond the immediate principles involved. Or perhaps the full truth is simply that Alward and I had gazed so long upon the bright light of our dream that we had been blinded to everything else. It was not the first time that important, fundamental truths had been overlooked in the too zealous pursuit of a goal.

But exactly how the omission had taken place was not important. What mattered most to me, once I knew what had happened, was whether or not it was possible for Burden and me to return to the period from which we had come.

"Time!" I muttered, turning abruptly to Julon. "Time! Julon, the ancients were very wise. Didn't they ever discover how to travel in time?" The thought was exhilarating in the hopes it offered. I would be able to see Suzanne again. And after Alward had found a way to correct the flaw in the principle of the *Starling*, Burdeen and I could return to help Julon and his people.

But Julon shook his head. "I have never found any record-spools which discussed travel in time. I doubt that the ancients ever discovered it at all. Time is merely an extension of space, a relative quantity arising from motion in space. It is not, like space, a tangible or available medium for travel."

Everything went out of me. I felt empty and cold, unutterably desolate.

It was checkmate. Julon could not help us, nor could we help him, we were stranded here.

CHAPTER V

A Vital Discovery

NOTHING more was said for a long while. I stared blindly at the grass, thinking in despair of what Julon had said. Abruptly I grew conscious of what seemed at the moment a glaring inconsistency. I turned sharply to Julon. He looked at me with an evident glow of hope in his eyes.

According to what you say," I told him, "travel in time is impossible. Yet Burdeen and I reached this era by a method which is essentially time travel. We underwent a passage forward in time."

Julon shook his head with slow emphasis. "You confuse the meaning of the term. You are thinking of time as a cause rather than as an effect. The method by which you reached this era was not a true passage through time, but the result of the effect upon your time rate of speed approaching that of light."

"But," I persisted, "the fact still remains that Burdeen and I accomplished what in a sense may be called traveling in time."

Julon smiled slightly and shrugged. "In a sense, yes."

"Then if there is a passage forward in time, there ought to be a passage backward. It should operate both ways like everything else."

"The assumption is logical, but it does not hold good under the conditions which you call time travel. You moved forward in time, because your motion at close to light speed slowed your time rate with respect to that of observers on the world you left. Thus thousands of years passed for them, while only a half hour passed for you. Now, keeping in mind this condition, suppose we reverse the process to ef-

fect what you hope would be a passage backward in time. You would have to attain a motion approaching absolute rest, as you had in the beginning attained a motion approaching absolute speed—the speed of light. Thus a half hour would pass here . . . while thousands of years passed for you. Under the conditions postulated, there can be no other result, no other course.”

“It’s hopeless,” Burdeen said. “You might as well forget the whole thing, Gilroy.”

I shook my head. “It seems hopeless—but only under the conditions given.” I turned back to Julon. “Suppose we base our assumptions upon a different set of conditions—conditions under which a passage backward in time would be as logical as had been the passage forward under the conditions we’ve discussed?”

“What would be the nature of these new conditions?” Julon asked.

“I don’t know,” I said. “I only know that they would necessarily lie outside this space-time continuum. We might reason as follows: Terming our space-time continuum normal space, then acceleration in normal space approaching that of light leads to negative acceleration in time. That is, the time rate of the observer in motion with respect to that of an observer at rest, at the departure point, is slowed.

“Now we might assume the existence of a different space-time continuum, which we shall call negative space, where effects are exactly opposite to those in this space. Then acceleration in negative space would still lead to negative acceleration in time—but it would be negative time. Thus if we were to follow as closely as possible the circumstances of the first flight, traveling for half an hour at close to light speed, the flight in negative space would take us back in time almost

exactly the same amount which we had undergone in the passage forward.”

“A clever idea,” Julon said. “Unfortunately, it is impossible to accomplish in fact. We know of no way to reach these outer spaces of which you speak.”

A SUDDEN thought occurred to me. It seemed merely a random notion, in no way linked to the subject at hand. But it persisted, and after a moment, in a flash of realization, I saw how it might be the exact thing I needed.

I grasped Julon’s arm. “We know of no way to reach those other spaces—but the ancients did! Look, Julon, by your own words, the ancients possessed interstellar travel. It could not have taken place through this space, since the time effect in combination with the enormous distances between the stars, would have taken them in time to a point where the Universe no longer existed. And they could not have traveled at a safe minimum below the speed of light, because a voyage under that condition would have taken many lifetimes. They could only have accomplished it by passing through some other space-time, where the time effect did not obtain, or where interstellar distance were contracted.”

“Yes,” Julon said, a dawning eagerness in his eyes. “Yes!”

“We’ve got to search,” I said, shaking his arm in my vehemence. “Somewhere there is a record-spool which explains about these other space-times. We’ve got to find it. You and your people have overlooked it before, blinded by your desire for space machines, never realizing that the secret was in your possession all the while.”

“There is a chance that you may be right,” Julon said. “We may have overlooked this knowledge. But if it exists at all, we shall find it.” There

was grim determination in his tone. He rose purposefully from the bench, and with renewed hopes Burdeen and I followed.

A special meeting was held in the council building that afternoon. Every Ardian had been called upon to attend.

Julon lost no time in explaining the purpose of the meeting. Speaking slowly, as though to impress upon the gathering the importance of his words, he recounted the discussion which he had held with Burdeen and me that morning, and the decision to which it had led. Finally, he detailed the nature of the search which had to be undertaken, emphasizing the fact that no clue however slight was to be ignored.

The meeting ended on a note of high enthusiasm. The Ardians seemed delighted with the opportunity which had arisen, slim as were its chances for success.

As the chamber cleared of its excited throng, Julon turned to Burdeen and me. He said, "We will now return to the house. With the project under way, I wish to investigate my own record-spool collection. I cannot recall any dealing with the subject of space-time, but it is possible that I have overlooked or forgotten them."

It proved to be no easy task, for Julon's library was quite extensive. The record-spools were but little larger than spools of thread, and it was amazing how many of them could be contained in a relatively small space. Like books once had been, they were titled according to the nature of their subject matter, but an examination of the titles alone was not enough, since what we sought might have been touched upon briefly, or contained in a paragraph or so of digressive material. We were thus compelled to run most of the record-spools through spectacle-like reading devices.

Several days passed in this manner. To avoid eye-strain, we took frequent periods of rest. And we read with painstaking slowness through the collection so as to miss nothing. But we found not even so much as a mere mention of the information we sought. Only the knowledge that some seeker among the other Ardians might turn up something kept me from sinking completely into despair.

THE others reported one by one to Julon. For the most part, they had been no more successful than ourselves. Some thought they had discovered the desired facts, but these turned out upon examination to have no relation to what we wanted. A few turned in with more worthwhile results, but the information in the record-spools they brought, contained in a few sentences or so, was too brief or tenuous to be valuable. It was fully convinced that the quest was doomed to failure, when one of the Ardians brought in a record-spool which changed everything.

At first I could not see how it could possibly be important. The spool was a travelogue of a sort, relating the wonders of the various ancient cities. In the few passages that had any value, the author told of a wonderful machine contained within the Science Building in the city of Shago. His name for the machine was "The Omni-mech", which in our tongue means almost nearly "all-wise machine." It seems that a group of ancient scientists, realizing that the increasing dependence of the people upon the servant-mech would lead eventually to a dark age when these finally stopped, constructed a machine-brain which would embody all human knowledge. The Omni-mech was thus a pseudo-living encyclopedia. Its purpose was to inform and guide, from the simple questions and problems which

a savage would have, to the more intricate and detailed difficulties of a people as highly advanced as the Ardians. The idea was that the machine had a sort of involuntarily ability to raise back to the civilized level a people who had fallen into barbarism. Whether or not it had succeeded in this purpose was not revealed.

The full significance of the machine burst upon me in a flash. The ancient scientists who constructed it had obviously known the method of access to space-time continua other than this one, and since the machine embodied all the knowledge of that time, it was evident that this information would be contained along with everything else! Exultation roared through me like a great wind. The secret we sought had not been irretrievably lost after all. Return to the Earth I knew—to Suzanne—was something no longer relegated entirely to the realm of the impossible.

Nor was the importance of the machine, interpreted in his own way, lost upon Julon. His face lighted in incredulous joy. "Space machines!" he whispered. "At last the secret is within reach!"

I gripped Julon's shoulder eagerly. "We must go to Shago," I said. "We must find the Omni-mech."

He nodded slowly, sobering. "We will go—but there will be grave danger to us."

"Danger? What do you mean?" I demanded.

"Shago is inhabited by a tribe of savage degenerates," Julon said. "This much was learned by the few explorers who have been there—and who were fortunate enough to return alive. The degenerates worship the machines in Shago, considering the entire city holy ground. They are very ruthless toward intruders. If we are discovered, it is likely that we shall never live to return

with anything we learn."

CHAPTER VI

Disaster in Shago

ON A gray and dreary morning, we flew eastward in the *Starling* toward the ancient city of Shago. Space within the vessel, limited to begin with, was cramped, due to the fact that Julon and Elvar accompanied us. The discomfort was no great problem, however, since the speediness of the ship would bring us quickly to our destination.

Two days had passed following our decision to visit the city in quest of the Omni-mech and the precious information it contained. We had spent the time poring over old maps—maps of the country and of the city—and gathering together the equipment we would need. We had heavy clothing to wear in the bitter cold, a supply of food to tide us over should our search take longer than anticipated, flying belts, and long cylinders like over-sized ancient flashlights which released atomic force. These latter were ingenious devices. By manipulating a tiny switch on the handle, the force could be controlled in intensity, so that the device served at once as a lighting and heating unit, a weapon, or as a cutting tool which pierced the hardest metals as easily as wax.

Because of his age, there had been some reluctance on the part of Burdeen and myself to include Julon. When our excitement had vanished sufficiently to enable us to view the expedition in a more practical light, we had realized that a young man would be of more value. But Julon had insisted firmly on going with us, pointing out that someone would be needed to guard the ship while we were gone, and that an old man would serve as well

as a young one. To prove his point, he had given us a demonstration of his dexterity in handling the atomic cylinders, adjusted to weapon intensity, which had quickly convinced us that he would be fully the asset that he claimed. We had not been able to take along any further persons, since four in addition to the equipment was the *Starling's* full capacity.

It was with chaotic emotions that I watched, in the view-plate, the country flash by below us. Elation surged through me at the thought that Suzanne might soon no longer be just a memory, just an abstraction, but real and near. Then I thought of Shago and the wonderful machine in the Science Building called the Omni-mech, and fear grew heavy and cold inside me. Suppose the machine had deteriorated through the years—suppose the degenerate inhabitants of the city had damaged it?

With an effort, I forced myself into some measure of calm. Worrying solved nothing, I realized. Time only would show the destruction or fulfillment of our hopes.

I glanced at Burdeen, sitting next to me, fingers resting with a sort of detached attention upon the controls. His brows were drawn in a faintly puzzled frown, as though thinking of something he didn't fully understand. It was easy enough to guess what was on his mind, for his expression was one he frequently wore when gazing at Varis. She seemed to bewilder him, awakening emotions within him that conflicted with his natural impulses. When with her, he was strangely quiet and kind, not at all like the dashing, possessive Burdeen I remembered.

The reasons for his behavior seemed understandable. He loved Varis, as one could not help but love her, but he must have realized it could lead to nothing in the end. Like myself, his thoughts

and desires were all for returning to the Earth of the time we knew as home. He wished to do nothing which, when the time for departure came—if it ever did—would cause the girl regrets. And it puzzled him.

Nor were Burdeen and I the only reflective ones. Julon and Elvar were watching the view-plate, but from the fixed blankness of their eyes, I knew they didn't really see it. They were looking into vast distances beyond, thinking, surely, of the stars and of the new home they hoped to find there.

THE warp generators hummed softly in the bemused silence that filled the control room. The ship was some twenty-thousand feet high, traveling at a speed close to six-hundred miles an hour. We could, of course, have gone more rapidly, but this would have made difficult the finding of the landmarks which were to guide us to the city. It must be remembered that the land had changed. Most of the old rivers and lakes were gone. Some followed new courses, while others had become frozen in the intense cold of the north and covered over with snow.

We had been following the coast eastward along the Gulf of Mexico. Finally we reached one of our landmarks, the mouth of a great river running at right angles to our course. The river was not the Mississippi. It lay some three-hundred miles east of where the Mississippi had been. The city was located in an almost straight line from the mouth of the river, and would now be easy to find.

Burdeen swung the ship north. We dropped closer to the ground, our speed slackening. The vast forests below us, spreading away on either side of the river, began to thin. Snow began to cover the ground more and more thickly. Immense glaciers gleamed

dully in the wan light of the sun.

At last we reached Shago, looking from above like a huge gray-blue stain against the white fabric of the snow. It was not the city Burdeen and I had seen upon our return. It was many times larger and taller, if possible, than that first city had been. Full awareness of its stupendous size came to us dazedly as we descended. The eye could not grasp all of it at once. There was just a general impression of gigantic metal towers, shining in soft pastel hues, and a network of inter-connecting aerial spans that dropped down level after level toward the ground.

The vastness and complexity of the city beat at us like a tangible force. Then, as we floated down toward the towers, we grew conscious of something else. It was the quietness of the city, the utter lack of motion. The stillness seemed to hold a subtle air of menace, as though inimical presences lurked in hiding among the shadows.

Julon pointed abruptly at the viewpoint. "There it is!" he said. "The Science Building."

We could hardly have missed it. The Science Building was located almost in the center of the city, its spire reaching hundreds of feet higher than the others all around it. As we drew closer, we made out more distinctly the metal statue surmounting it. The statue depicted the figure of a man in the act of leaping, one arm outstretched, a symbolization of Man's eager quest for knowledge. From the descriptions given by the record-spool dealing with the Omni-mech, the building had been easy to find.

Burdeen landed the ship upon a topmost terrace of the building, which the fierce winds at that height had kept relatively free of snow. We donned heavy hooded jackets, strapped the flying devices to our shoulders. Then,

each grasping an atomic cylinder, we were ready to leave. Julon, who was to remain on guard at the ship, saw us off with a word of caution.

"You will have to hurry. If the degenerate inhabitants of the city have seen us arrive, they will come to investigate."

With Julon's warning an ominous echo in my ears, I followed Burdeen and Elvar from the ship. Instantly, as I stepped outside, a fierce cold wind smashed at me, hurling me almost to my knees. I braced myself with frantic haste against the ship's hull, a vision flashing through my mind of being blown from the terrace to a horrible death on the ground over a thousand feet below. I gasped for breath, the wind roaring past my face in a constant gale. A terrible cold began to close around me, like the grip of a giant fist of ice.

Burdeen shouted something. He had to repeat it before I understood him over the howl of the wind.

"Down! How are we going to get down?"

"Through the building," I yelled. "It's the only way."

IT HAD been our intention to descend on our flying apparatus along the side of the building, seeking an entrance on one of the lower floors. But the wind rendered this impossible. We would have been blown away helplessly in the attempt.

A short distance from where we stood was a series of long narrow windows. They were not windows as we understood them, for they were flush and continuous with the wall, merely transparent portions of it. Inching over to one of the windows, we adjusted our atomic cylinders to the proper intensity and began to cut a circular opening large enough for us to squeeze

through.

Nor was the task before us any simpler once we reached the interior, since the building was a veritable maze of chambers and halls. We knew that the Omni-mech was located on a lower floor, near the ground level, but we could at first find no arrangement which would permit a descent. We wandered through numerous and seemingly endless halls before we came at last to one where, in the center, the opening of a circular shaft gaped.

The bottom of the shaft, as we peered down, was lost in shadows. Spaced at intervals around its walls were vertical rails. Understanding of the purpose of the shaft came to me after a moment. It was similar to an elevator shaft of familiar memory, save that ascent and descent were accomplished by individual apparatus, like the flying devices, instead of by a car. When one reached the floor of his destination, he simply grasped a rail and swung himself out of the shaft.

I gestured at the opening. "We can go down through here, on our flying belts," I told Burdeen and Elvar. "But first we'd better leave direction markers to help us find the ship when we return."

Our wanderings had given us a rough idea of the plan of the chambers and halls. Without much difficulty, we found the window through which we had entered the building, and blazed a trail back to the shaft by searing guide marks at intervals along the walls and floors with our atomic cylinders. Then, switching on our flying devices, we began the descent.

Slowly we floated down through increasing darkness, amid a silence so deep it was uncanny, the flying devices bearing us as easily as feathers. They functioned on a principle somewhat similar to that of the *Starling*, save that

they warped gravity instead of space. And they were, of course, marvelously light and compact. By comparison Alward's warp generators were crude and ponderous constructions.

In our descent we discovered plaques fastened to the rails, numbering off the various floors. These guided us to the floor where, according to the record-spool, the Omni-mech was located. Our search even then was hardly simplified, since the building increased in width toward the base and this part of it contained several times as many chambers and halls as toward the top. Finally, however, we came to a chamber which by its size alone indicated its importance. And it was lighted. Huge globes in the ceiling shed a bright steady radiance over even the farthest walls.

We had been using our atomic cylinders for illumination. Now we switched them off, peering in wondering silence about us.

What we had seen of the Science Building so far had shown us that it was a sort of museum, containing specimens and exhibits of every scientific achievement known to the ancients. If such it actually was, then the machine which occupied most of the chamber must surely have been its chief attraction. At first glance it resembled nothing so much as a squat pyramid, narrowing in tiers toward the top. Then the eye took in separate details, the bewildering complexity of wheels, gears, wires, and tubes which made up the entire mass—all glinting and shining in the light.

A sudden current of eagerness raced through me. The machine was the Omni-mech. Even if I hadn't had the description of the record-spool to go on, I should have known from the size and intricacy of the machine that it couldn't be anything else.

GESTURING excitedly to Burdeen and Evar, I strode forward. The machine seemed to rise up before me as the basis of comparison shifted gradually from the vast chamber to myself. When I had approached close enough, I saw that a certain fear which I had entertained was groundless, for the Omni-mech had not been damaged. Thought of this brought abrupt recollection of the degenerates. We had lost a lot of time in locating the machine. Now we would have to hurry, since there was always the possibility that the degenerates had seen the *Starling* arrive. If they actually worshipped machines as Julon had said, then merely touching the Omni-mech would be considered the highest sacrilege.

Burdeen strode up to my side. "What are you going to do?" he asked. "How are you going to get the information we want."

"There's supposed to be a place where one can get into communication with the Omni-mech," I said. "We'll find it, and then—"

"There!" Elvar said, pointing. "See the stairs?"

Following the direction of his arm, I saw a flight of narrow, ladder-like steps leading up to the first tier of the machine. I nodded. "That seems to be the place. I'll go up and see what I can accomplish. Burdeen, you and Elvar had better remain down here and keep a close watch for the degenerates. They may not have seen the ship, but we can't take any chances."

While the two posted themselves on guard, I quickly mounted the steps, reaching a narrow space at the top which was enclosed on three sides by wall-like partitions. A section of the flooring beneath my feet gave a little, startling me. And then, as though to increase further my dismay, a sudden vast hum arose from somewhere deep

within the machine, and simultaneously, tubes at various places glowed into life. I smiled wryly as I realized that my weight upon the floor had awakened the Omni-mech into activity.

I studied the panel before me. Set in it at various places were enigmatic slots and openings. Before I could so much as guess the purposes of these, a voice spoke—a soft, metallic voice that seemed to issue from somewhere close beside me.

"You have come for knowledge," the voice said. "Tell me how I may serve you."

I stared rather wildly about me, half expecting to see some strange being at my side. But I was still very much alone. In another moment I awoke to the fact that the voice had sounded from one of the openings in the panel before me. And it had spoken in English—oddly accented, perhaps, but still very much like the English to which Burdeen and I were accustomed.

I decided quickly on a course of action. The information desired by Julon was comparatively more simple than my own, and would show me what to expect by testing the ability of the Omni-mech.

Accordingly, I voiced in English a wish to obtain complete plans, details, and specifications of the interstellar vessels possessed by the ancients.

When I had finished, the machine spoke again. "The knowledge you wish will be given."

The humming of the machine seemed momentarily to deepen. Wheels turned and tubes brightened with an air of subdued, efficient activity. Suddenly there was a clicking sound from the panel before me. A soft rustle followed, and an object moved into sight through one of the slots.

"It is done," the Omni-mech said.

The object was a bound, thick sheaf

of papers. There were diagrams and illustrations, and pages of mathematical and explanatory material. Even a short scrutiny showed that the information was so simply and clearly given that translating it into material form would hardly be a difficult task.

The hopes of Julon and his people now seemed definitely on the road to fulfillment. But my own? Would the Omni-mech be able to help me?

"There is something else that I wish to know," I told the machine.

"Tell me how I may serve you," it requested again.

I OUTLINED the story of how Burdeen and I had arrived in this era, then explained the theory of negative space by which I hoped to effect a return to our own time. "What I want to know," I concluded, "is whether a condition such as negative space exists, and if so, how can access to it be accomplished?"

The Omni-mech hummed thoughtfully for a while. Finally it said:

"Mathematics shows the concept of negative space to be tenable. I base my conclusion upon an extension of the Hyperspace Equations, which have made possible interstellar travel. The Equations serve as the framework for all other orders of space-time, but the fact that such an extension is possible indicates an important link. It may very well be that hyperspace is a sort of dividing line between this and negative space.

"The method of access to hyperspace shows that access to other orders of space-time is also possible. As the Hyperspace Equations serve as a framework, so does this method of access serve as a key. But my knowledge of other orders of space-time does not exceed these fundamentals. I have the foundation—but not the necessary

structure above. Thus I lack the vital factors with which to formulate a method of access to negative space. I cannot help you."

Despair almost like sickness rushed over me. The Omni-mech was unable to help after all. There could be no return—exile was permanent. And Suzanne was doomed forever to remain just a memory.

I turned in leaden bitterness to leave the platform. But in the next instant I halted as an idea flashed into my mind. I whirled back to the panel.

"Perhaps I can supply the factors you need," I told the machine.

"New knowledge is always welcome. Proceed."

Slowly, carefully, so as to skip nothing, I detailed in mathematical terms the principle of Alward's warp generators. The Omni-mech digested this information with a humming note of deep interest. Abruptly the humming rose in pitch. Wheels turned and tubes brightened. If a machine could possibly display excitement, this was the time.

"You are correct. The factors you have given provide a solution. And they indicate an important relationship to the Hyperspace Equations, which leads me to believe that these are not fundamental after all, but a highly specialized development. They also bear out the existence of a link between hyperspace and negative space. Everything, in fact, seems connected with the warp principle which you have given."

"But the solution," I prompted impatiently. "I've got to know."

"The warp generators themselves provide the method of access. Only a few simple changes are needed. These will be explained in permanent form for later reference."

The machine hummed and clicked

busily. Then through the slot where the previous one had appeared, a second bound sheaf of papers rustled into view. Though thinner than the first had been, it was to me infinitely more valuable.

I muttered a few hasty words of gratitude, and turned to hurry down the ladder. Burdeen and Elvar had forgotten their guard duties in their interest at what had been taking place. Their faces were stretched in broad grins of joy and relief.

I waved the papers at them.

"Here it is! Everything we want to know!"

AS THEY examined the papers curiously, I grew aware once more of the deep, unnatural silence of the building. The Omni-mech had quieted when I stepped from the platform. There was no sound now, save for the faint rustling of the sheets in the hands of Burdeen and Elvar.

And then, like a crash of lightning in the stillness, came a sudden clattering noise.

As one, we whirled. I heard Burdeen gasp. Elvar dropped the sheaf of papers he had been holding. I was conscious of these things with a strange clarity, even as my own body jerked in alarm.

Not thirty feet away stood a group of over a dozen men. They had evidently approached from the opposite side of the Omni-mech, moving so silently that we had not heard them. They were short, dark, squat, dressed barbarically in skins and furs. In their hands they held various crudely fashioned weapons, knives, spears, and fixed bows. They held these watchfully, as though prepared at any instant to use them. They stood there and looked at us out of hard little black eyes, set in faces that were brutish and

cruel. They were, I knew instinctively, the degenerates of whom Julon had warned.

Burdeen whispered, "Get your atomic cylinders ready. It looks like we're going to have a fight on our hands to get out of here."

But as we reached slowly and cautiously for the devices, there was a guttural shout of command, and the degenerates leaped forward. They were incredibly fast and strong. Before we could do even so much as aim the atomic cylinders, they had reached us.

The struggle that followed was as short as it was futile. I was the first to go down, stunned by a blow to the temple. Burdeen and Elvar managed to hold out a while longer, but the odds were hopelessly against them. They were borne to the floor, stilled by blows and the sheer weight of numbers of our attackers.

Through a fog of semi-consciousness, I grew aware of being bound with raw-hide thongs. Then I was carried outside. My senses cleared as the cold air hit me. On the snow before the building were a number of large sleds, drawn by huge shaggy dogs. Burdeen, Elvar, and I were tossed unceremoniously into one of the sleds. Orders were shouted, whips cracked. Whining, the dogs lunged in their traces. We were under way—bound for a destination that only our fierce captors knew.

I squirmed to a more comfortable position and glanced at Burdeen. His rugged features were pinched and bleak. He shook his head a little at me, said nothing.

Elvar was staring straight before him with a strange, fixed intensity, as though hypnotized. His expression frightened me. I called his name anxiously, but he didn't so much as flick his eyelids. Had a blow on the head injured his mind?

CHAPTER VII

One Must Stay

THE runners of the sled moved smoothly and effortlessly over the snow. I could hear the degenerates talking or calling to each other in their thick guttural voices. They seemed vastly pleased. And occasionally the dogs of the different teams would bark eagerly in their attempts to outrace each other.

I had a nightmarish sense of unreality. The city was like a fantastic jungle around us. The buildings seemed the boles of immense trees rising endlessly into the sky, the network of criss-crossing aerial spans overhead a tangle of huge lianas and vines. The twilight through which we moved heightened the illusion. Only a little of the weak sunlight ever managed to reach this level of the city.

The sleds drew up at last in a sort of courtyard formed by a group of buildings arranged in a circle. It didn't seem that we had traveled very far, certainly not over a mile or two.

The circular group of buildings seemed the quarters of the degenerates, for as the sleds entered the courtyard, people erupted from the doorways, gathering in a growing crowd around us. They fought to reach the sled in which Burdeen, Elvar, and I lay, shrilling excitedly. Those nearest pushed and plucked at us curiously. They were the same in dress and appearance as the band that had captured us. And I noticed that they smelled quite offensively.

With shouts and gestures, our guards finally cleared a circle around the sled. We were pulled roughly erect on the hard-packed snow. The bonds at our ankles were untied. Then, while part of the guards formed a moving wedge,

the others dug their spears into our backs and marched us into one of the buildings.

The building seemed to be one of importance, for sentries were posted at numerous places within it. We were taken up a flight of stairs, down a short hall, and into a huge room. The floors were covered profusely with thick furs. Shields, spears, and swords hung upon the walls. Fires burned in two huge metal bowls set on each side of a massive carved chair. The smell of the burning wood did little to mask the strong, rank odor of the room.

In the chair, warmed by the fires in the flanking bowls, sat an old man. He was immensely fat. His fur garments were decorated lavishly with metal and bone ornaments. He stared at us with a kind of piggish interest out of little black eyes set deep in folds of pale flabby tissue. From the deferential way our guards bowed to him, I decided he was a chief or king.

In raspy, arrogant tones, the old man voiced a question. The leader of the guards launched into an explanation, gesticulating animatedly. When he had finished, he advanced to the chair, holding out the atomic cylinders and the two precious sheaves of instructions which had been taken from us. The chief examined these. They didn't seem to mean anything to him. With a grunt of disdain, he handed them back to the guard and issued some decree concerning us that brought grins of animal delight to the faces of the others.

Burdeen, Elvar, and I were taken to a small adjoining room. Two degenerates stood guard at the door. They watched us with a sort of anticipatory gloating. Something was going to be done with us that gave these people a savage pleasure. It couldn't have been anything good.

Burdeen muttered, "Wonder what

they're up to?"

"I'm trying not to think of it," I said.

"Do you suppose they're going to . . . kill us?"

"It looks that way. And indications are that they intend to get a lot of amusement out of it."

"Torture . . . ?" Burdeen whispered.

I nodded slowly.

ELVAR didn't seem to be aware that we had spoken. Before we had been brought into the room, he had seemed almost his normal self, conscious of what was happening around him. But now he was once more staring fixedly into space, like one held in a trance. I called his name a few times, without results.

Burdeen asked, "What's the matter with him?"

"I don't know," I said. "I've never seen anything quite like it. He seems to have been frozen by shock."

Burdeen was silent for a while. Then he said:

"Julon is our only hope. He might grow worried by our absence and search for us."

"He wouldn't know where to look," I said. "The city is too big. And he was too high up in the building to have noticed us being carried away."

Burdeen's face twisted in desperation. "Then we've got to do something! We can't just let them do . . . whatever they intend to do to us!"

"What can we do?" I asked.

With an inarticulate sound, Burdeen abruptly lunged against his bonds. Almost instantly the two guards left the door, leaping at him and pointing their spears at his body. He quieted. His face took on a hopeless resignation that wasn't good to see.

Faintly, from outside, came an excited babble of voices. I twisted around

to glance through the one large window with which the room was provided. Through it I saw the fronts of other buildings some distance away. I realized that the building in which we were located faced upon the courtyard. The excited clamor was coming from there.

I don't know how much time passed. I sunk into an apathetic listlessness, only dimly aware of the boisterous tumult taking place outside.

Then the door opened and a number of degenerates strode purposefully in. Their faces had been painted in weird designs, as though for a ceremony of some kind. Burdeen, Elvar, and I were hauled to our feet and pushed at spear's end from the room. We were taken outside, to the courtyard. A sick emptiness filled me at what I saw there.

Approximately in the center three wooden posts had been driven into the hard-packed snow. Piled at the bases of each were mounds of brushwood.

We were going to be burned to death—and evidently while alive.

Despite our frenzied struggles, we were borne relentlessly to the posts and lashed immovably in place. The instruction sheets which we had obtained from the Omni-mech and the atomic cylinders were placed at our feet, useless things to be destroyed along with us. Nor had our flying devices been removed. Apparently they were considered parts of our clothing.

The degenerates gathered in a circle around us, a wall of leering, wolfish faces. There was a sudden booming of drums. The painted warriors who had bound us to the posts now began stamping and chanting in what was obviously a sort of victory dance. By degrees, the beat of the drums increased in tempo. The warriors danced faster, their feet thudding against the snow in a quickening staccato rhythm. The crowd took up the tuneless chant, and

the surrounding buildings hurled it back.

It didn't seem real. It was like something out of a dream. In the heart of the greatest city the world had ever known, savage throwbacks to a dim primitive age danced and chanted.

And then the crowd parted to let a figure enter the ring. It was the fat old chief. In one pudgy hand he clutched a flaming torch.

In a pompous waddle, the chief strode to Elvar's stake, bent to ignite the brushwood. Elvar didn't seem at all concerned. He was looking upward, toward the sky.

THE chief paused a moment, glancing upward, too, as thought to see what could possibly interest Elvar more than his own impending horrible death. He screamed, a thin bleating sound. Dropping the torch, he flung himself madly at the crowd, now a solid unmoving mass of flesh as it, too, stared up at the sky.

The drums had stopped. The chanting had stopped. A thick stifled silence lay over the courtyard.

Overhead, dropping swiftly down, came the *Starling*!

With shouts and yells of fear, the crowd awoke into motion. Sheer press of numbers thwarted its concerted efforts to flee. It became a maddened beast, ripping and clawing at itself in wild unreasoning fright.

The *Starling* descended to within a few feet of the ground and swung in a great circle, its tapering nose plowing into the heaving mass of figures and spreading further pandemonium. It kept moving until the courtyard had been cleared of all who had been able to escape. The motionless figures of those who had been trampled were scattered numerously over the snow. Among them was the fat old chief who had

ordered our deaths.

At last, a few feet from where we stood, the *Starling* came to rest. The entrance port opened, and Julon swung to the ground. He peered warily about him for a moment, the atomic cylinder gripped in his hands. But the degenerates hadn't yet recovered sufficient presence of mind to return. With a fleeting smile in our direction, Julon bent to pluck a knife from the belt of a nearby sprawled form. Then he ran over to us, sliced quickly at our bonds.

"Hurry!" Julon urged. "Into the vessel!"

I paused only long enough to snatch up the precious instruction sheets. Burdeen and Elvar gathered the atomic cylinders, and then we clambered into the ship.

Within seconds, Burdeen at the controls, we were rising into the air. With the familiar confines of the control room once more around me, everything that had happened seemed a fevered delusion. Only did the miracle of our escape strike home. I whirled on Julon.

"But how did you know what had happened?" I demanded. "How did you know where to find us?"

Julon smiled. "Elvar told me."

"You must surely be joking," I protested. "How could Elvar possibly have told you?"

"By telepathy, of course."

"Telepathy!" I gasped.

"Can it be that you know nothing of this science?" Elvar asked, surprised.

"I know it," I said. "But the people of my time never considered it a science." I understood suddenly Elvar's strange trance-like condition while we were held captive by the degenerates. It had not been the result of a blow on the head, as I had feared. He had merely been in telepathic contact with

Julon.

"The studies of the ancients brought mental telepathy to the state of a science," Julon said. "But learning to use it efficiently is very difficult, and for most persons impossible. Elvar and I had the advantage of kinship, being father and son, and in addition we have been practicing ever since Elvar was a child."

"And the ship?" I said, aware of another inconsistency. "How did you know how to operate the ship?"

Julon shrugged. "I watched Dan Burdeen operate the controls, and merely imitated his motions. My mind has been trained to observe and remember." He smiled again. "That is another science of which we know. And now I should like to ask a question of my own. You have secured the information we need?"

"All of it," I said. I showed him the instruction sheets. They were not written in his language, but the diagrams and illustrations would be easy to follow. And I could always make such translations as were necessary, as they were not greatly technical. The interstellar vessels of the ancients had, in fact, been astonishingly simple machines, despite the magnitude and intricacy of the principles on which they operated.

AFTER a moment Julon looked up from the sheets. His eyes shone with a strange moistness. "Were it not for your coming, all this would never have been possible," he said. "How can my people and I ever thank you?"

"You must not try to thank me," I told him. "If thanks is due at all, it is to the Fate that wove the threads of our lives into this pattern."

Julon nodded slowly. "We might call it Fate. The more men learn of science and the Universe, the deeper grows the

realization that the ordering of laws and forces is too perfect for mere blind chance. Who can deny that the hand which controls the destinies of atoms and suns does not occasionally reach to embrace human lives as well?" And his eyes, shining in gratitude that this might be, looked toward the stars.

The ship hummed on its way to Ard.

Our return, unharmed, and with the information for which we had set out, was the cause for a delightful celebration. A huge banquet was given in our honor at the Council Building that evening. Festivities lasted until far into the night. Exhausted physically and emotionally by the tumultuous events of the day, we were glad when an opportunity finally presented itself that would permit us to leave. I fell asleep almost as soon as I reached my bed.

The weeks that followed were busy ones. I didn't immediately begin any work on preparing the *Starling* for the return to our own time of Burdeen and myself. The adjustments were simple and could be performed at any time within a few hours. They involved merely a reversal in the winding of the warp generator armatures, a different alignment of the field coils, and certain changes in the power connections. These alterations wouldn't change greatly the operating principle of the ship; it would still travel by riding a warp in the fabric of space—but it would be negative space. As the force created by the generators reached a certain intensity, the warp would invert into negative space; and since the ship would be carried along by the warp, it too would be swung into negative space. To exit, it was only necessary to decrease the propelling force below the intensity which had given entrance. It was as beautifully simple as all really great ideas are.

The time was spent mainly in com-

pany with Julon and a group of other learned Ardians, translating and clarifying the information given by the Omni-mech for the construction of an interstellar vessel. Everything, as we progressed, was recorded permanently on record-spools. When we had finished, the information compiled was arranged and classified according to a working plan and divide up among technicians, both human and mechanical.

With all this under way, my help was no longer needed. The Ardians were mechanical marvels, as evidenced by the fact that they had not only learned to repair and use the ancient machines, but had built others and in many cases improved on them. There was no doubt in my mind but that they would be able to conclude successfully the task which had been started.

I got to work on the changes in the warp generators of the *Starling*. As I went more thoroughly over the instructions given me by the Omni-mech, the feeling that something was wrong took hold of me. It was only a vague suspicion, nothing that I could definitely explain. But a certainty that it was of vital importance made it persist.

It wasn't until the changes had been completed and Burdeen and I were beginning our preparations to leave that realization of what was wrong finally came.

Burdeen and I happened to be inside the *Starling*, packing away some of the things we intended to take back with us as souvenirs. I dropped a box I'd been holding, and it fell with a startling crash to the floor.

Burdeen whirled and took in the expression on my face. "Why . . . what's the matter?" he asked puzzledly.

I DIDN'T answer. Instead, I went to the place in the control room

where I had left the instruction sheets. I went carefully over one of the mathematical expressions they contained, then seized a writing pad and stylus and performed certain calculations. A chill wind seemed to blow through me as I finished. The check-up had proven my realization correct.

Burdeen had followed me to the control room. "Say, what's wrong with you?" he demanded.

"Wrong?" I echoed dully. "Plenty's wrong. You see, one of us will have to stay here. For one of us there is to be no return."

Burdeen said slowly, "But why? What do you mean?"

"It's because of the changes we made in the warp generators," I said. "The operating principle remains basically the same, but in the translation to negative space, an entirely new factor has to be considered—the mass of the ship. As the propelling force created by the generators reaches a certain critical intensity, the inversion of the warp and consequent translation of the ship take place. But this critical intensity is a function of the mass of the ship. If its mass is over a maximum limit, inversion and translation fail to take place. Instead, a terrific strain upon the fabric of space would be created which would cause a collapse. As a result, we would be hurled into some alien space-time continuum from which we could never hope to return."

"And the ship is over this maximum mass limit?" Burdeen said.

I nodded. "By over two-hundred pounds."

"Couldn't we get rid of this excess weight by stripping the ship?"

"You know the answer to that as well as I do," I said. "Everything that wasn't absolutely necessary has already been removed. We might be able to discard a few parts here and there, but

they certainly wouldn't total over two-hundred pounds in weight. No—the solution I gave is the only one that can be considered. One of us has to stay.”

“I weigh over two-hundred pounds,” Burdeen said thoughtfully. His blue eyes turned grim and hard. “Listen, Gilroy, are you trying to trick me into staying here? If you're lying to me, I'll knock you from one end of the valley to the other.”

“Take the instruction sheets and my calculations to Julon,” I said. “Have him check them. He'll tell you the same thing I did.”

The doubt left Burdeen's face. He looked at me, and I looked at him, and the same thought ran through our minds.

Which of us would be the one to remain?

CHAPTER VIII

The Long Way Home

IT WAS a fateful moment. Until now I had been too startled by my discovery to think of its possible effects upon my hopes of returning to Suzanne. Fear chilled me as I realized what might happen.

Burdeen wanted to return as badly as I did. That was evident from his restraint toward Varis. If he had been reconciled to the idea of remaining permanently in Ard, he certainly would have paid her more attention. But he had merely been kind to her, as a man will be kind to a girl when he has another on his mind. Like myself, he hadn't been able to forget Suzanne and the world from which we had come.

Now a return was possible—but only for one. For either of us to volunteer willingly to remain seemed out of the question. And I knew that Burdeen would no more gamble his chance

than I would. It was too precious to risk. That eliminated such obvious solutions as choosing straws, contests of strength or intelligence, or leaving the decision to an impartial outsider.

The only way out of the dilemma seemed for one ruthlessly to exterminate the other. It was a conclusion at which a man of Burdeen's temperament would logically arrive. I recalled only too well the fear I'd felt on the morning just before the flight that Burdeen, aware Suzanne loved me, might try to get me out of the way by some means which would look like an accident. Nothing so complicated was necessary now. Burdeen could merely overpower me, reduce the weight of the ship by the additional amount needed, and leave. Back in our own time, he could simply explain that I had volunteered to remain behind. The explanation that I had fallen in love with Varis would satisfy Suzanne as to my reason for having done so.

I knew Burdeen was thinking thoughts similar to mine. And I knew he must already have decided on a course of action.

Only one of us would leave the control room. It would not be willingly. It would not even be while conscious—or alive.

And it would happen now, within seconds. Neither of us could allow the other any time to prepare an offensive.

Burdeen had been looking at me. A flicker crossed his face—warning of an impending motion. With the instantaneous reaction of tight-wound nerves, I leaped to the nearest pilot chair and poised my fingers over the control studs in its arm.

“Stop!” I snapped. “Come near me by so much as one single step, and I'll send the ship into an acceleration which will kill us both.”

For a moment Burdeen looked puz-

zled. Then he smiled and shook his head. "Don't be a fool, Gilroy. If you have any ideas that I might force you to stay here, you can forget them."

"You're lying!" I said. "I know very well that you want to get back as badly as I do."

Burdeen shook his head again. His smile became faintly sad, faintly contemptuous. "You're wrong. You see, Gilroy, for a long time I've been torn between two desires—to stay here, and to return home. I just couldn't seem to make up my mind, but now it's been made up for me. I'm staying."

"This is the way I look at it. There'd be nothing for me if I went back. Suzanne loves you. I could win her over in time, but it would be only to share her with a memory—and I want all or nothing. And back home I was just a pilot—a good one, maybe, but good pilots are easy to find. Here, I'm a power behind the throne, so to speak. Julon and the others need me. They'll get their star ship, but they don't know piloting or navigation. Somebody'll have to teach them that. Besides, I'd like to see the stars, and this is my chance." He paused a moment, as if in hesitation.

"And there's Varis. She's a sweet kid. I couldn't seem to make up my mind about her either, but now I know I love her. And I know she loves me. So there's no reason for me to want to go back. I know when I'm well off—even if it did take me quite a while to realize it."

Burdeen was sincere. His eyes and the tone of his voice told me that beyond any slightest doubt.

A wave of sudden shame beat over me. I had thought and acted like a melodramatic fool.

I don't know how I managed to overcome my pride, but I went over to Burdeen and held out my hand. I said

awkwardly, "I'm sorry . . . Dan. I didn't know all this. I judged you according to my own feelings about the situation, and I know from experience that this is never a good guide to the other fellow's thoughts. I won't be so quick at jumping to conclusions next time."

Burdeen gripped my hand hard. "Forget it. I said and did some things that would give anybody the wrong ideas. Here's hoping you get home safely . . . Chuck."

I LEFT a few days later. To avoid excess weight, I had to discard many of the souvenirs I'd intended to take along. I had also to refuse gifts of food and flowers from the Ardians, which in quantity would have filled to bursting at least half a dozen ships the size of the *Starling*. I did, however, take with me several small light articles which would prove that Ard had actually existed. And there was a letter from Burdeen to Professor Alward, which in a moment of high spirits he had written in the form of a resignation.

Leaving was harder than I had anticipated. Julon, Mera, Elvar, and Varis had become my friends in the deepest sense of the word. And Ard, with its classical buildings and tall golden people, had after all been a very pleasant place. It was with a burning constriction in my throat that I shook hands all around and closed the entrance port against the farewell cries of those who had come to see me off.

I buckled my safety straps and watched the view-plate, waiting until the crowd had moved a safe distance away. The last thing I saw, as I took off, was Burdeen, waving, his arm around Varis. Though tiny in the view-plate, her face looked radiantly happy.

The tasks involving my return were

not difficult. I had only to follow the original course which the *Starling* had taken, being careful to accelerate and decelerate within the former time intervals. The translation into and out of negative space would occur automatically, as the intensity of the propelling warp rose toward and fell below the critical level. While in negative space, I would travel for a half hour at close to light speed, so that the same amount of time would pass relative to Earth as had passed previously. Since this would be negative time, I would find, upon my landing, that I had returned to a period close to that from which I had left. In actual practice, however, I intended to travel at close to light speed for a little longer than a half hour, to make up for the time I had spent in Ard.

During the trip back, I was filled with constant anxiety that something might go wrong. That nothing actually did, I can only thank the Omni-mech—or Fate. Time—relative to myself, of course—seemed to drag like centuries. I found that I was able to stand the acceleration with less discomfort than on the first flight. It was as though my sojourn in Ard had toughened me.

Negative space proved to be disappointing. It looked almost exactly like normal space, except that there seemed to be fewer stars. The only sensations I experienced in the translation into and out of it were brief tingles throughout my body, as though every atom had momentarily generated a tiny current.

At last Earth was under me—the familiar Earth I knew—and I was dropping down toward the upper end of Lake Michigan. Various landmarks guided me to the little lake, inland, near which Alward's house was situated. Then I was gliding down toward the construction hangar. The *Starling* set-

tled gently to the ground.

I was home.

IT HIT me quite suddenly. I was back at last, after all the unhappy hopeless months. And it wasn't just a dream. It was real—as real as the promise of tomorrow. As real as tears. . . .

After a while I pulled myself together sufficiently to unbuckle my safety straps and unlock the port. As I swung to the ground, Suzanne and Alward came running from the house. The surprise and delight on their faces was a welcome more eloquent than words could ever have been.

"Charles!" Suzanne cried. "Charles—you're back! You've come back!"

"Back to stay," I said against her hair.

"Did the ship work?" Alward asked impatiently. "But why were you gone so long? It's been almost two weeks since you left. And . . . and where's Dan?"

My story took up most of the afternoon. I don't think Alward and Suzanne actually fully believed me until I showed them Burdeen's letter and the articles which I had brought with me from Ard. Even then it took quite a while for them to grasp the extent of my adventure. And I was called upon for days afterward to recount various aspects and phases of it. I don't think that the wonder of it ever dulled for them. I know it will never dull for me. In my mind, memories of Ard, of Julon, and of the Omni-mech will always be shining and bright.

I should end here, but it really needs one more detail to conclude my narrative satisfactorily.

Several days later, Alward told me of a new project upon which he was working. "I never thought of the time flaw in my principle, Charles, and this

because the principle itself opened up new vistas which blinded me to everything else. You see, I have come to realize that it is not an end in itself, but the means to an end. It is the basis for something bigger, more significant. The calculations I am now engaged in working out will, I feel, in time lead to a vastly superior method of interstellar travel than that which the principle first suggested. It is linked with hyperspace."

Alward looked as though he expected me to be surprised, but I'd been expecting this sooner or later. I'd said nothing

to him about the Hyperspace Equations, or the method of interstellar travel through hyperspace possessed by the ancients of Julon. It hadn't been necessary. There had been more of a link between Alward's warp generator principle and the Hyperspace Equations than the Omni-mech had guessed.

The name of the man who had created the Equations and thereby the interstellar drive had been given in the instruction sheets which I had obtained and translated for Julon. The man was Professor Alward.

THE END

The OBSERVATORY

by the Editor

(Continued from page 6)

on, these two will "debate" it out in our pages until all those questions have been answered. It seems to us to be a marvelous way to answer everybody, and clear up many apparent contradictions, misunderstandings, and misinterpretations. So, if you want to get the real lowdown, and be in on an interesting verbal battle, read "The Shaverian Hypothesis."

ONE of the strangest things Shaver has ever sent us appears under "Medieval Illicit" which is typical of the mass of material of a personal nature which our private file on Shaver contains. He has told us thousands of things which we have not mentioned on these pages. We present one of them here, with the comment that you read it and think about it seriously. Just what does it mean? How does it tie in with the mystery? Can it be literally true? If so, why? You'll find that the more thought you put into this article, which might even be termed to be "mystically" written, the more meaning you'll get out of it. Apply it to our present-day world, and the inferences are shocking.

H. C. GOBLE gives us another of his "science of the future" articles on Light Speed, which is always an interesting subject. You'll find some new concepts in this article, and whether you accept it or reject it, there is food for thought there, and maybe not a little fact!

JACK PREBLE gives us "Approximation" which was inspired by the mathematics of Roger P.

Graham. We won't say anything about math right now, but this article puts some good points, and we'll let the math readers tear it apart—or support it, as the case may be.

THEN we have "What Man Can Imagine . . ." presenting a new theory by one of our readers. This department has produced some amazing things, and will produce a lot more. Your own theories are invited for this department. We pay our usual rates for articles included in it.

WE ARE interested in science fiction crossword puzzles—so why don't some of you readers work some up, using terminology peculiar to *Amazing Stories* and we'll buy them from you. We think our readers would enjoy working out a puzzle or two between the Shaver Mystery, Edmond Hamilton, Chester S. Geier, The Green Man and Rog Phillips' club-fisted stories!

DWIGHT V. SWAIN just blew into town and bought our dinner for us. We pointed out that he didn't need to bribe us to get us to buy his stories, and that we considered his friendship well worth the purchasing. So no doubt you'll be seeing a Swain epic one of these days. Dwight, by the way, is living in the Ozarks with Lil Abner. That is, he's living with his family, trying to keep his wife from having a crush on Lil Abner, and his wife is trying to keep him from sneaking off to see Daisy Mae. Say, Dwight, are the gals down there *really* like Al Capp draws 'em? If they are . . . what, the deadline on *Amazing Stories*? . . . oh, that!

YES, that! If you readers don't know it, the bane of editorial existence is the deadline. It is that line which is drawn directly ahead of an editor by the production department, which if he crosses it he's a dead man, and if he doesn't he's a dead man! That same deadline, shoved ahead a few days at the time, which has kept

your Discussions column down for two months, and has snafued our general makeup all along the line. All we can say is that we HOPE you get the story we promised you for the next issue!

HHEY, don't forget the flying saucers! Keep your eyes peeled on the skies, and keep right on sending your editor your rough sketches of 'em when you see 'em. We want to thank the readers who have already cooperated in this. We know that those who have already sent us drawings really did see them, because they all incorporated material which we've kept carefully secret. That's how we check on hoaxers. And there's another thing . . . we're glad to announce that practical jokers are beginning to lay

off us, and we sure appreciate it. You see, even the jokers are beginning to realize that they are the ones who look silly, now that the saucers put a new light on the matter. As for proof of the Shaver Mystery, we are delighted to announce that you'll get it at last, just as soon as we can present it in a proper manner, befitting its importance.

AND one last blast at those of our critics who "note we are soft-pedaling the Shaver Mystery." Ever hear of the knockout punch? It takes a big windup! And besides, our change of pace has delighted thousands of our readers. Proves we have the BEST in EVERY KIND of science fiction! *Rap*

★ ASTRONOMY AND ANCIENT RELIGION ★ ★ IN PLAYING CARDS ★

By REV. IRENE FARRIER

WITH many religious people, the very name of "playing cards," brings out a look of horror upon their faces, and you can see that they are always associating gambling rooms, pool halls, late hours, and all that goes to forward an evil career with the pasteboards. This is not to be wondered at when you consider the sorrow and want that the manipulation of these little pieces of cardboard have caused.

On the other hand, if we were to ask those who have had most to do with cards, I am sure we would hear them say, without knowing a thing about philosophy, something about "lucky suits, cards or his luck holding good at different times," little knowing the origin of these same cards and caring less.

It has been claimed by many that the French invented cards to amuse the nobles of the court, but the markings of the cards themselves disclaim the truth of this. The court cards, or face cards as we call them now, have the likenesses of ancient Egypt and the secret symbols of the priests of Isis. These symbols have been handed down and reproduced by each generation of card printers who have done this without ever becoming aware of the reason.

The gypsies, at our county fairs, have preserved the secrets and have always associated their card work with the stars, and planetary motion, time and the mysteries of the occult, without any knowledge of their deeper significance.

How far can we go back to find their origin? Perhaps to the time of the Atlantean rulers, but most surely to the Egyptian priests, who used them in their sacred astronomical mysteries, for there is abundant evidence to show the facts of this. The priests regarded them as sacred

emblems of astronomical time and combinations of the solar system.

As the religion of the Egyptians was wholly based on astronomy, and the cards were constructed with mathematical and symbolical reference to time planetary motion, and the occult mysteries, in them we find that the fifty-two cards correspond to the weeks in the year. The court cards correspond to the months and signs of the zodiac, thus hearts in the first quarter, spring, love and friendship; clubs in the second quarter, summer, knowledge, learning, and religion; the third quarter is diamonds, symbolizing fall, the gathering of the crops and wealth and power from the same; spades rule the fourth quarter with winter, cold and darkness.

Every aspect of astrology has its ruling card, and in ancient times they recognized only three-hundred-sixty-four days in a year. As each card rules a day under each of the seven planets during the year, multiply seven times fifty-two and you see you have 364 which exactly fill out the year. The odd day was regarded as a waste of time by the ancient priests and has no symbol.

The thirteen cards in each suit are also astronomical, indicating a knowledge of good and evil. Although the manufacturers have tried many, many times to alter and put before the public different packs of cards, they have failed, for fifty-two there were in the beginning and fifty-two they will remain until this very day. And this day the emblems that were considered too sacred to be touched by any but priests, have been trampled in the dust by the profane and the thin sheets of ivory of mystical designs have become the modern playing cards of gambling.



HATE

by **ROG PHILLIPS**

Introductory comments on file of Operator Gregory Jones; 4-1-52-4 by J. A. Lindsay, pers. supvr.

THE first time I ever saw Gregory Jones was just in passing—a teen-age hitch-hiker passing a native kid in a strange town. I was the hitch-hiker.

It was some town in northwestern

Kansas, but I can't remember the name of it even now, though I could look it up in the card index when I get back to base if it were important enough.

I had been riding with some local farmer. He dropped me at the grain warehouse just outside of town, and I tramped down the street, taking long strides so as to get to the other side of town as soon as possible where I could

What is hate? What if you lived on a planet that was made especially for that mad emotion?



... booted the head viciously across the control room ... it made complete the aura of hate that seemed to flood everything



thumb another ride.

I passed a school-house, empty because of the summer vacation, and then several girls passed me. They looked me up and down scornfully. It was one of those towns where everybody knows everybody else. I suppose my dusty clothes, unpressed and badly worn, told them I was on the bum, so they looked on me as a no good tramp.

That didn't bother me. I had been living in Milwaukee, working in a factory. My folks had been moving around the country for two or three years. Now they were settled in Spokane, Washington. I had decided to go home, and had hiked down to Kansas to take in the harvest so as to have some money to go home on. I knew I was just as good as those girls—maybe better.

Then, half a block before I got to the main business section of this town, I passed this twelve-year-old kid. Being seventeen myself, I considered him just an infant.

I didn't notice him particularly until he looked up. By then we were only a few feet apart. When he raised his eyes from the sidewalk they held a baleful glare that seemed to hit me with almost a physical force.

There was only one word to describe that force that flowed from his eyes. Hate. Not hate of me, because those eyes from the sidewalk they held a baleful just hate by itself.

I whistled to myself as I passed this kid, half expecting him to make some move toward picking a fight. I had never seen hate so intense before, but yes like those usually presaged a fist fight.

A few seconds after I passed him I turned to look back at him. He was still walking along, his eyes once again on the sidewalk, from the angle to the back of his head.

By the time I caught my next ride I

had forgotten him. After all, on that hitch-hiking trip from Milwaukee to Kansas, and then to Spokane through Yellowstone, I saw many thousands of people and lots of interesting things. Why should I remember one twelve-year-old kid, even though his eyes actually sprayed hate?

I asked myself that same question thirty years later when he walked into my office and I recognized him the minute he came in the door. I KNEW he was that twelve-year-old kid I had seen thirty years before. I couldn't remember the town, but I remembered him.

I couldn't remember how he had looked then. I couldn't say whether he had changed any in features during that thirty years or not.

I JUST KNEW it was him. His eyes didn't spray hate this time. They wore a veil. I gained the impression that he had learned to veil that beam of hate by the time he grew up, but that it was still there, ready to turn on again, only many times more intense now.

I doubt if he remembered me. After all, I had been just a dusty hitch-hiker with no outstanding characteristics for him to remember me by.

After the first moment of shock I glanced down at the appointment list on my calendar to see who he was.

He was Gregory Jones, with a yen to become a space hermit like the rest.

I'm personnel supervisor of the worst branch of the service. There are twenty-five thousand observation posts in the solar system. They're built so they run automatically, recording all kinds of things like ray analyses, densities, gravity potentials, etc. All they lack is that one thing that a human can still say he has and machines do not. Intelligence.

We tried manning these stations with

crews at the start. Nothing but trouble. Then we tried finding bosom buddies and manning the stations with them. We found this even worse. After that we tried married couples. That didn't pan out either.

At last we tried manning the stations with just one man to a station. That worked all right except that at the start sixty percent of the poor fellows went completely insane. Regrettable as that was it showed us just what type of person could be left on one of these posts for two years without going nuts. The survivors were all men who had taken some kind of absorbing work out with them that would take about as long as their time out there to get done.

After that it was simple. We advertised for guys with ideas that weren't worked out. No matter how crackpot the idea, we professed great confidence in it to keep the sucker's ambition at high pitch, and set him on one of the stations with all the equipment he needed to follow his dreams.

All he had to do in return was wake up or drop what he was doing when the emergency gong boomed out, and find out why it had done so. That was all. It might never happen, but IF it did, he would have perhaps fifteen minutes work.

Gregory Jones had what we considered a A-1 interest. There are two types that answered our pleas for screwballs. One is the inventor or theoretician with a line of original work. He sometimes goes nuts.

The other type is the one that wishes to do some detailed research in the history of something or other. We provide him with a few tons of books from the copyright office and forget about him. The books come out a little the worse for wear, but the man generally produces another book or two during the two years he's out in space, and

it's generally a very valuable book.

And the man comes back mentally stable and ready to take his place in the world as an authority on something or other. Some of our greatest historians have spent several stretches that way.

Gregory Jones wanted to spend two years delving into the occult in history and literature. It seemed all right. All I had to do was sign the O.K. on his card, and the steno would give him a carte blanc on the congressional library for all the books he wanted.

FROM then on I wouldn't have needed to bother about him. But for some reason he intrigued me. Perhaps it wasn't him, but the mystery of that illogically persistent memory of him, that intrigued me.

Whatever it was, I gave him a line about my having to take a personal interest in the new men, and invited him to bowl with me that evening.

I watched him bowl for an hour and a half. It was like watching a giant diesel locomotive pull one flatcar. I could sense the quiet, muffled throb of terrific mental power, carefully throttled. He bowled as I can bowl only when I am so mad that my mind is like ice. Hate was the source of his power. Hate, carefully hidden and controlled. Hate so intense that all emotion is submerged, and the mind becomes a precise machine, incapable of the slightest error in judgment.

I'm afraid my game that evening was rather poor. I've bowled three hundred only once in my life. I averaged only one forty-six that night, while Gregory Jones had only five spares in six lines and a single split. No scratches.

If you are a bowler yourself you are probably wondering why a young man who could pile up that kind of bowling would want to volunteer for a solitary

post in space, with only a ton or two of books for his companions, for two years. I wondered myself, and the more I saw of Gregory Jones, the more I puzzled over the matter. Especially did I puzzle over his choice of books.

I've heard of books on mysticism which contained the "secrets" of unearthly powers, whose readers, by learning to chant the secret words, could command the forces of darkness to do their bidding.

I wondered if Jones might have such a search in mind. After the bowling game we went to a little cafe on a side street, and there I asked him point blank what specific plan he had for his research during his two years.

At first he refused to talk about it. When I threatened to refuse to accept his application for the job unless he talked, he finally gave me an "explanation." I put quotation marks around that word because it was patently an explanation concocted for the express purpose of allaying my suspicions, and was far from the truth.

I "accepted" his explanation for two reasons. First, if I were to turn him down he would automatically go before the reviewing board, and I felt they would O.K. him over my objections, since I had no specific psychological factor to base my refusal on that would be visible to the board. Second, I was too curious about Jones to let him go out of my life before I had satisfied myself about him.

So it was that two months later one of the passengers of the patrol ship Spengler was listed as Gregory Jones, recruit, station 639-03-2615.

TO THOSE of you who are unfamiliar with the purpose of these space stations a few words of explanation will be in order.

A 1947 experiment proved that there

is an ether after all. It is not the ether of the eighteenth century theoreticians, which was a rigid, stationary medium through which all material objects move with no resistance, nor is it the warpage of space itself, as Einstein and other theoreticians pictured it.

It is a fluid, powerful and mobile, whose currents dictate the motions of every material particle from the electron to the giant suns.

Made of sub-electrical particles, of the same primal "stuff" as the electrons and protons themselves, it pervades all space, and gravity is an effective drift of this fluid toward material things.

When any large body such as the sun or the planets has a satellite or two circling it, the satellite causes this inward drift to rotate about the body in such a way that a vortex or whirlpool results.

The large body, being at the center of the vortex, rotates on its axis at a speed dictated by the rotation of the vortex. The whole thing has been reduced to mathematics now, so that the periods of rotation of all the planets and their satellites are known in terms of the vortexian currents throughout the solar system.

Out where the planetary vortices blend in with the master vortex of the sun, there are eddy pools following each planet. These give the effect of being small bodies, attracting debris of space and condensing it into small asteroids which eventually grow large enough to have a gravity field equal to the natural intensity of the eddy vortex. Then they cut loose and either find a stable orbit or plunge to the nearest planet as shooting stars.

The space stations for the most part follow these eddies and keep measurements of their strength and their orbits. This is an important work, for any space ship luckless enough to cut

through one of these eddies comes out melted and twisted beyond recognition. Voltages in the billions are built up in their metal parts. Shearing stresses in the thousands of tons tear through the body of any living being in such an eddy.

Imagine a gravitational pull of two hundred earth gravities pulling at one arm, and a diametrically opposite pull working on the other arm. Imagine your body as the axis of a spinning hell, rotating at a speed of seventy or eighty thousand revolutions a minute. Imagine the blood pressure in one part of your body suddenly jumping to a thousand pounds per square inch, while in another part it drops to nothing. Then you can realize the lethal effects of passing through a gravitational eddy.

THESE eddies are not all predictable. A few of them are several hundred years old. A bit of rock passing through one may destroy it. Another may spring up in the most unexpected place in a fraction of a second, to follow an erratic course for a few millions of miles and then vanish as suddenly, or to settle down to a stable existence for an indefinite period.

One of the jobs of the network of space stations is to keep track of these lethal eddies, and to warn space ships around them. And it is a work that has paid dividends. Before the formation of the interplanetary survey branch, twenty percent of all space ships met disaster not later than their third voyage, and only five percent lasted for more than ten voyages.

Since the establishment of the space stations only one half of one percent of all shipping has met with disaster from these invisible eddies.

Completely automatic, their delicate instruments probing in work too fine for the coarse touch of human hands and

minds, the space stations are ALMOST self-running and foolproof. Almost, but not quite. Failure of parts can't always be predicted ahead of time, and, although automatic replacement takes care of tube burnout, overheating, etc., the burnout of every tube in a replacement bank in a period of a few months sometimes occurs, nuts come loose from vibrations, soldered joints and even brazed joints sometimes crystallize and break, so that failure of the station might result without some person present to correct the unforeseen.

When such an occurrence takes place the automatic analyzer localizes the fault so that finding it is as simple as finding a book in a public library. A soldering iron or a package of tubes, coupled with brains and fingers to remedy the fault, are all that are needed.

To illustrate how vital in this mapping of the eddy vortices of the solar system, a ship taking off at this minute for Venus would pass through twenty-seven of these eddies if it were to take the most efficient trajectory between the two planets. Each of these eddies is powerful enough to destroy the ship. None of them could be detected and located by the instruments the ship itself carries.

Space travel is not the simple thing pictured by early twentieth century fiction based on limited science. The first space flights were suicidal. It was thought that direct hit by rock fragments in space was the only real danger. Actually, a direct hit by such a fragment is not as dangerous as a near miss.

X-ray tubes in the laboratory were based on the fact that fast moving electrons striking a surface in a vacuum generate hard radiation. The northern lights were attributed to electrons streaming from the sun striking the Earth's stratosphere. Yet those early

pioneers did not think of these same electrons striking debris in space and generating x-rays in enormous quantities.

Cosmic rays were definitely proven to originate from the bombardment of debris strewn throughout space by fast moving electrons whose voltages ran up into the billions.

Yet these could be measured, and the swarms of metal fragments in space followed predictable orbits, so that fatalities from cosmic ray burns never reached alarming proportions.

That such deaths were more numerous than those from direct strikes followed the laws of probability. If these two sources of danger had been all there were, space travel would have been child's play.

It was the ether eddy, that phantom field with no core, in whose center forces greater than those of the sun itself rend matter and spew it forth in unrecognizable lumps, that took the major toll of lives and ships in the days of space travel before the space stations began patiently to detect them and warn ships away from them.

And it was to one of these stations, tagging along behind Mars, that Gregory Jones was being taken to live for two years with three thousand six hundred and thirty pounds of books and magazines—all dealing with the occult. Books, and a hate so intense that it dominated his mind to the core.

THE day before he embarked as passenger on the *Spengler* I had a final talk with Gregory. I wanted to get at the root of that hate—find out what caused it. I sent for him.

I didn't tell him about my remembering him from thirty years before. I tried the delicate approach. His answer to my hint that I had sort of sensed a hatred for something in him

and wondered if his true motive in going out in space might not be to "get away from something" was to laugh and frankly admit that I was partly right.

"You see," he said, "emotions are the key to mental power. Hatred is generally frowned upon because it is usually hatred of some person or something. But hatred as a pure emotion is the strongest mental force of all, and the man who learns to harness it controls a force without equal. I have done that.

"After all," he continued, "what is the difference whether you do a perfect job because you hate mistakes or love to do a perfect job?"

"You mean," I asked, startled out of my self-composure, "that you can use hate for good ends without working harm to either yourself or others?"

"Of course," he replied. "You can fight better, learn better, do better, if your ruling passion is hate. Hate breeds intolerance. And intolerance *properly directed*, is the key to progress. It is only when one's hate of injustice grows equal to one's love of justice that one fights against injustice. It is only when your hatred of your imperfections resumes a dominating, driving force that you really begin to strive for perfection."

With a grin that held an intangible element of contempt, he turned and left my office.

I never saw him again alive. I saw what was left of him, and I obtained his diary. The instrument he developed will go into the secret vaults of the patrol—just in case.

I should have guessed. Hate can never be a power for good. I should have prevented him from going to a station. I should have prevented his leaving Earth. Now it is too late, and an instrument exists that should never have been created.

DIARY OF GREGORY JONES 639-03-2615: 4-1-52-4 (with comments by J. A. Lindsay, pers. supvr).

I am here. *I am here.* I underline that statement with a feeling exultation, for here the hate within me can reach its full fruition unhampered by the prejudice and superstition of lesser mortals. It's March first, 2052. Two years from today the patrol ship will return to pick me up.

If I am able to succeed in the work which I can only dimly visualize at present, that ship will be picking up the future master of all humanity!

What am I after? I don't know exactly. It all began that day so long ago, when I was barely out of diapers and into trousers. I may have been four or five. I know I hadn't started to school yet.

I can remember it just like it was yesterday. It was spring, early in the afternoon. I was in the vacant field in back of the lumber yard on the outskirts of town, alone.

The growing grass smelled sweet in my young nostrils, and the murmur of the brook that wound its tortuous way across the meadow laughed lazily at my youthfulness, while self-important frogs croaked bravely, watching me from their unseen vantage points beside the brook.

I stumbled over a rock, hidden in the tall grass. It was a nice big rock, so I tried to lift it. It wouldn't budge. I was so intent on trying to lift the rock that didn't see Francis and Marvin until too late to run away from them.

Francis and Marvin were bullies who tormented me every chance they got. Two years older than me, I stood no chance against either, let alone the both of them together.

I ran, but knew it was useless. They

caught me at the bank of the brook.

I writhe even yet when I remember the indignities they subjected me to. Head duckings until I was half drowned, frogs in my mouth and clothing—those stupid frogs who hid by covering their eyes in the silt at the bottom of the creek, knuckle rubbing on my head and sensitive parts of my body.

Always before they had left me at last—a sobbing mass of bruises and humiliation, to crawl home in fear, and live the subsequent days, until they caught me again, in terror.

But this day something took place. It took place while my head was under water, my mouth pushed into the filth and slime of the creekbed.

One instant I was terrified, my thoughts almost insane from the many times inflicted tortures of these two young Hitlers. The next instant my mind was cool, in the calm bath of a hate that turned my muscles to steel and my thoughts to cold, mechanical reason.

I THINK they sensed it instantly, for Marvin, who had held my head under water, let go with an exclamation of sudden fear. He ran, but I caught him around the knees and dragged him down. He was whimpering when I put my small, pudgy fingers around his throat.

No, I didn't kill him. I tortured him as he had tortured me. I made him eat dirt and cow dung. I gouged his eyes with a calm sort of pleasure. And all the time I was doing this Francis watched, a terror as great as my hate seeming to hold him to the spot.

I worked on him next, wondering in the back of my mind why he hadn't run. I left the two as they had so often left me—whimpering, suffering babies.

I went back the way I had come. The

hate that had been born in me was nice. It gave me a feeling of exhilaration, and my thinking was clear and lucid.

I came to the rock that had resisted my efforts before. It was a challenge which I accepted with a scientific curiosity.

It moved easily this time. I rolled it over and then stood up, looking at it. I KNEW, now. Hate was a power greater than any other.

I learned the truth of this more and more as time wore on. I learned to turn this hate on and off at will. I knew from people's reactions that they could feel this hate as a physical thing.

I used to get a sort of pleasure out of turning it on strangers suddenly and watching their expressions as they felt it strike them.

And then I had to learn to veil it. But inside it grew and became a living force—stronger and stronger, year by year.

I knew from careful study that undirected it could become a dangerous thing which might wreck me, but that under control it would give me anything I wished.

I married when I was twenty. I won't speak of that except to say that it didn't work out. I should have known that my power of hate would create only fear in a normal woman. If I had found someone who had discovered the same secret of the power of hate I might have had a successful marriage. Or if I had not hated suffering and fear so much from having experienced so much of it myself.

Now I am alone in time and space! In space I am over a million and a half miles from the nearest person, and in time—TWO YEARS. Two years! Yes, dear diary, I will taint your virgin pages one by one during the coming two years with thoughts that are known only to men who walk in darkness and in secret.

And I will cull from the pages of these books I have with me the secrets of those predecessors of mine, those former disciples of hate, who left their footsteps in the sands of the past—for me.

Is hate evil? I don't think so. Did I not drive my wife from me with a blast of merciful hate which wiped her heart clean of love for me, so that she could live on without regret, and find happiness with some lesser mortal? Have I not driven the lion, that king of beasts, back into his cage with a hate blazing in my eyes that was greater than his own? Didn't I save a circus crowd from possible injury and certain panic by doing so, when I was only fourteen years old?

Hate is greater than love, and more powerful. Hate is greater than ambition, for all ambition must be based on some hatred to succeed. Hate can be humane. Hate can purify and cleanse. Are not men taught to fear the wrath of God?

* * *

4/2/52: I spent most of yesterday and today getting settled. My clothes are unpacked and nicely racked in their closet. My books are on shelves, grouped under authors in alphabetical order. Last, but not least, I have explored every part of this huge monster of a station. Every square foot of it.

Perhaps I should describe it a little. It is designed primarily to detect and track down space eddies. That is done in a very simple way, but a way that does not lend itself to compact equipment.

The principle of detecting an eddy is roughly this: when two light beams are blended together they form certain patterns. If anything alters one of these

beams the pattern changes. So, if an eddy intersects one of the beams the pattern changes.

In a station such as the one I'm on, the bank of detectors SCANS the immediately surrounding space much as the thin beam in a television tube scans an image. This scanning sets up an alternating current which is fed to the analyzers, which break it down to details.

Since, in the composite picture presented by the fluctuations in the current, a space eddy has its own peculiar characteristics, the analyzers can pick them out and locate their exact positions.

Not only that, most of the details of the eddies can be measured with great exactness.

In addition to the scanners there are the pointers. These are so made that they continually point at an eddy, moving with the eddy, and constantly measuring any variation in it.

The work of the scanners and the pointers duplicates each other. Their data is fed to BANKS of analyzers which all do the same work, so that if some of them broke down the work of the bank goes on without a hitch.

From the outside, as we came within sight of the station yesterday, it appears to be a giant cockle but floating in space. Its huge arms extending in all directions give it that effect.

Inside, it is a luxurious heaven in which all dreams come true.

I didn't get to make the acquaintance of my predecessor. I was confined to my cabin during the first hour's contact with the station. Then I was hustled off with a cheery "Good luck!" from the captain.

My boxes and crates were neatly stacked in the storeroom of the station.

I strongly suspect that my predecessor had been found a mental casualty,

from the tone of that final greeting from the captain. I would have liked to have seen him.

I wonder how they act if they have been alone and irrational for many months, when they are face to face with human beings again. For that matter, I wonder why so many go insane out here? It is passed off as loneliness. But loneliness is like heart trouble and a cold; it is a name that covers up more than it explains.

Perhaps I may find out. Already, once, this morning, I felt a strong feeling of regret that I had taken so rash a step as to come out here. It was peculiar, that thought. Almost like hearing a voice over the telephone. It didn't even sound like my own thoughts—outside them in some indefinable way.

The larder of this station is plentifully stocked. The captain told me that all stations are stocked with food and air renewers and water to last more than a lifetime, so that if anything were to happen no man would die for lack of sustenance before he could die of old age.

AFTER the first two days' entry in the diary the entries were merely routine for over seven months. During this seven months Gregory Jones entered into a serious search among his books for references to the old masters of hate whom he sought. Also he seemed engaged on some sort of electrical research whose nature he did not put down on paper.

On November the seventh there was the puzzling statement that he had finally been able to "affect the selenium cell measurably."

On December eleventh there was another brief but mysterious comment to the effect that he had "made a contact." After that, for two weeks the

date alone was entered in the diary.

The first entry which in any way cast light on subsequent developments which culminated the way they were found by the *Spengler* on its return journey was . . .

1/4/53: At last I have run onto something in all those books I brought with me. It was in Frond's History of Evil, published in 2023. The account of the secret group of devil worshipers that infested Angkor Wat and nearly brought about its downfall before they were found out and executed by the priests.

Even under torture they didn't reveal the hiding place of their secret doctrines. This hiding place was discovered in 1965 by the Smithsonian group.

How I wish I could read the translation! So at variance with conventional concepts of good and evil it must be, that even they, materialistic as they are reputed to be, would not reveal the contents of these secret doctrines.

There is a way to find out, though. My contact is becoming more fluid and facile. Those secret doctrines are in a certain room in the Smithsonian Institution. Perhaps—

My experiments on the mental control of selenium circuits are definitely meeting with success now. Funny that all these years I have made the mistaken conclusion that the effect people feel from the hate I have carefully cultivated came from my eyes.

The mistake was natural. My eyes take on a certain glare. People feel the impact of a mental force and see that look in my eyes. Immediately they conclude that the effect they feel comes from the eyes.

It doesn't, as I have definitely proven. The selenium circuit proves it. The secret of that circuit is so simple.

Yet I dare not put it down here lest this diary get out of my hands, and the secret with it.

A whole, vast science, not even suspected by the human race! And I have its rudiments at my command now. With the fifteen months left me on this station I should be able to achieve a mastery of this science.

IF IT were not for subsequent events, and the physical evidence of Gregory Jones's remains, and that machine hidden away in the secret vaults of the Patrol, I would put this entry down as the first evidence of space madness to evidence itself in the man.

The hint of a "contact," with the implication there that this "contact" could enable Jones to obtain information contained in writing on papyrus rolls stored in a building on the Earth, while he himself remained millions of miles out in space—madness is built from just such thoughts.

His "proof" that his power of hate did not emanate from the eyes is absurd, whatever it might have been. I had experienced it myself, and I am positive that it came from his eyes.

I grant that Gregory Jones discovered a vast field of science unsuspected by man, and still unknown, even though the Patrol has that machine.

From what little we dared to do with the machine, it is possible that Jones discovered the basics of the Ultimate Science, and that if and when the time comes that we reach the knowledge he attained of this science we will be able to create and destroy universes at will. May it please God that that time never comes!

I am not a religious man, but I feel that man is too unstable a creature to be entrusted with the knowledge of Creation itself.

The next entry casting any light on

the events that transpired was:

2/20/53: I have done something which would be considered treason to my employers. I disconnected one of the analyzers from the bank.

I'll put it back again when I am through using it, and there are enough of them so that this one won't jeopardize the operation of the station.

What an incredibly complex thing the human mind is! The analyzer almost burst its sides from the amount of work involved in reducing the concept of such a simple thing as a table to its sine wave elements.

I am beginning to wonder if the two years will be quite enough for me to accomplish my objectives. Those I had in mind when I signed up for this job will be accomplished long before the two years are up, but my sights have raised now, so that I can see much more clearly the possibilities in store for me. Things I had not even dreamed of, let alone conceived as possible.

* * *

In this entry we saw reference to "the sine wave elements of the concept of a table." This is one of the many, meaningless things that become more and more common as the days progress. It is easy enough to understand what COULD be meant by this expression. It is well known that almost any curve can be expressed as an infinite series whose variables are sines of other variables.

In fact, that is the method upon which the scanning mechanism of the stations is based. The alternating electric current set up in a circuit by the scanners is an embodiment of a complex sine wave. The analyzers reduce this complex wave to any number of pure waves by a method of tuning, then tabulate them.

But for a concept to be reduced to such a wave, or set of waves, is absurd. It is about as sane as would be an attempt to find the difference in wavelength of two pieces of beefsteak!

Nevertheless, even though we might like to, we can't scratch off such utterances as being nonsense. The product of madness brought on by abnormal concentration of the mind on hate they might be; but they brought about the construction of a machine that works in ways that known science can't explain, so we must deal with these mad utterances in the light of whether they are true or untrue—not sane or insane.

All this is in the way of preparing the reader for what comes later. Without this preparation the reader might dismiss it all as being complete madness. That is easy enough to do except for the evidence of the machine and the remains of Gregory Jones, which I saw with my own eyes.

Gregory's activities would have alarmed the whole Patrol if it had known about them at the time. From February twentieth to March eighteenth he disconnected more and more of the station equipment for his own uses.

There is a total of over two hundred analyzers to a station, four in each bank, acting in unison. If one breaks down the other three carry on the work. It's like having four radio receivers all tuned to the same station and receiving independently. If a tube burns out in one the program comes in over the other three.

Gregory finally had taken two out of each bank for himself, leaving only two, so that if the two broke down the station would have a blind spot. This would make it possible for the station itself to drift into an eddy and be destroyed.

He connected all these analyzers in

series! This means that the sine waves he was analyzing had thousands of simultaneous wave elements.

His entries do not elaborate on this, but what developed indicates that this was actually the case. When the *Spengler* arrived on the scene the analyzers were all back in their places and operating properly. All that remained of this gigantic experimental project was the machine that will soon rest in the secret vaults of the Patrol.

From March eighteenth to the first of April the scattered references to this experimental work are completely insane. For example, on March twenty-fifth is the statement, "I materialized an arm all by itself this morning. It was solid to the touch, but couldn't pick up anything. This indicates a certain amount of heterodyning and self-hypnosis which must be eliminated."

These go on, in some places indicating a morbidity that is unbelievable.

ON MARCH twenty-seventh is the entry. "I materialized a human head. It rested on the floor and looked so much like a football that I couldn't resist. On impulse I kicked it with all the force that Hate can bring to bear. It flew through the air, screaming in pain and terror. The heterodyning is still there, because the head passed through the wall of the ship and was lost in outer space. The scanners picked it up and followed it for several miles before it became too small to detect. This encouraged me so much that I materialized several heads, one after another and kicked them screaming into outer space. The last one, for some reason, didn't follow its fellows. It bounced! It bounced back, to lay sobbing in pain on the floor. Now all I have to do is find out why it bounced and the others didn't."

Whether this event was pure imag-

ination or fact, the morbidity which produced it is the same. What we are seeing is the disintegration of the mind from the continual concentration on hate to the exclusion of all normal emotion.

The use of the word heterodyning is puzzling. Technicians will undoubtedly be put to work on this diary of Jones' in an attempt to unravel the principle of the machine. They will know more about this than I. However, if I remember my radio circuits correctly, heterodyning is a sort of feed back which enables an amplified frequency to reinforce itself many times over, so that the outgoing high frequency wave is much stronger than it would be by straight amplification.

We see from the diary that these initial objects Gregory seems to have materialized were solid to him but not to inanimate matter such as bulkheads and the shell of the station. Assuming that the actual materialization is measured by the solidity of the object relative to inanimate objects, we can conclude that due to some unknown heterodyning between the partly materialized object and Gregory himself it was more solid to him than it was in reality.

This is born out by his excitement when one of the heads rebounded from the metal plate just like any real object would do.

Perhaps it is far fetched, but I conceive what he was doing as being roughly something like this: he constructed an imperfect machine at the start which could pick up his thoughts in something which he called a selenium circuit. There they were converted into an electric current which could be amplified and sent into a part of this machine which did the materialization in some unknown way. The materialization was seen by his eyes and fed back into the mind where it went

through the machine again and strengthened the materialization still more. That is the heterodyne circuit, I think.

What he was aiming at was a materialization that would be as solid as real matter. That is obvious, whatever the principle involved.

He succeeded in that with the head that bounced back, but he didn't yet know in what way he had succeeded. During the next four days he went ahead with renewed ambition. On the first of April we see his first success. In a way, it might be said that on this day he exhibited his one and only "normal" trait. He materialized a girl. Here is his entry for that day:—

4/1/53: Now I dare to put in the pages of dear diary those thoughts which before seemed dictated by loneliness instead of fact. I have mentioned before that I "made a contact." I have hinted at thoughts which seemed to come to me from "outside."

THIS morning my thoughts seemed to be taken over by some intelligence not my own. They materialized a thing which at first appeared as a vague, swirling mass—more cloud than solid. Gradually this took shape until after half an hour there stood on the floor before my eyes the form of the most beautiful woman I have ever seen. She smiled at me as I sat there with my head in place in the machine, staring at her incredulously.

Then she spoke, and with the sound of her words that strange feeling of some other intelligence controlling my thoughts vanished.

"It's done at last," she said. And there was a note of triumph in her voice. "You have done your work well, Gregory."

I didn't answer. My mind was a cyclone of thought. When she saw I

was not going to answer she said, "You may take your head out and shut off the machine now. I'm as real and stable physically now as you are."

I shut off the machine reluctantly, fearing that she would vanish. She didn't, though. For the next hour I was as one in a daze. I didn't think to question the outcome of my work. I could hardly realize that she existed.

"I'm Mabea," she said. She walked slowly toward me until she stood directly in front of me. The scent of other-world perfume swept into my nostrils. My thoughts swirled as I drank in that perfume and gazed in rapture at Mabea's beauty of face and figure.

Dressed in a filmy veil that seemed nothing more than a half obscuring mist, her yellow hair descending to cover her shoulders in shining waves, I was sure she could be nothing but a figment of my imagination. Yet, even while I thought this, I realized that my imagination could never produce a thing as wonderful and full of beauty as this.

Her eyes were a deep blue, framed by lashes dark as night. Her lips were a red that could never be duplicated by lipstick, nor was it the dull, shabby red of natural feminine lips.

I could feel the life of her as it reached across the short distance separating us and sent my blood rushing madly through my veins and arteries.

Then she was in my arms and my thoughts became a thing apart from me as I let myself go in the realization of a dream that never becomes more than a dream to most men.

Even now I can't believe it is reality, although I will be sitting down to a meal cooked by Mabea as soon as I finish this entry in the good old diary.

Mabea is Woman. She is more than a materialized product of my own imagination. She is a spirit from out of the

deep reaches of Space, incredibly old in years, forever youthful.

Her body? There is something I thought I knew, but now realize I know little of. The coming of Mabea has opened new vistas far greater than my feeble mind can encompass.

WHAT IS MATERIALIZATION?

This library of occult books which I brought with me is full of blithe statements on materialization. Origin of man, of the universe, and of the Earth are calmly blamed on Creation and a Creator. Yet what is Creation?

A while ago I examined the chart for mass adjustment of the station. I find that at the time Mabea became "solid" the station compensated for an increased mass of one hundred and twenty seven pounds, four and a decimal ounces!

I'm becoming convinced now that my work will not be completed within the two years. All I can hope for is that I can carry it to the stage where I can transfer operations to Earth where they can be perfected.

THE strange thing about this entry is that the mass adjustment chart DOES show an acquisition of mass. What Gregory Jones did not notice, or at least not mention, is that despite the evidence of the charts such a mass could not have approached the station, as it MUST have done to be acquired, without leaving the record of its approach also.

The chart merely shows that the mass of the station increased by the amount he mentioned in a period of slightly over three tenths of a second, without having approached the station!

Later mass adjustment records are even more startling in some of their implications.

Dropping this mystery for the time being, it is evident from the diary that

Gregory and his newly materialized companion violated all regulations of the Patrol with impunity during the next few days. If hatred is akin to love, certainly Gregory had spent most of his lifetime preparing himself for the change.

If Gregory had been making his entries in his diary with the idea in mind that it would be eventually published, he evidently forgot about that during these first days with Mabea, because the deletions necessary to make them printable would destroy their sense.

There is an undertone, however, that indicates more the finding of an equal in hate than a reformer in Gregory's materialization of Mabea. Her spirit was obviously the mate to his. That it may have been merely a reflection of his own, rather than the materialization of a distinct entity that had existed in the interplanetary and interstellar spaces for untold years, is born out by as much evidence as there is that refutes such a hypothesis.

Gregory evidently concluded hastily that his building of the materializer had been "inspired" by this being, Mabea. He at once accepted her as a partner as well as a mate.

As I study his diary more and more, I keep returning in my thoughts to the principle of heterodyning. Regardless of the nature of Mabea, Gregory's research from the date of her appearance took on the semblance of a definite plan rather than a scientific groping from the known into the unknown. Either Mabea WAS his inspiration before her materialization, and the "brains" of the pair, or their two minds had a heterodyne effect on one another which made the mental power Gregory originally had a pale and insignificant thing.

For example, consider the entry for September ninth, 2053.

9/9/53: The selenium circuit is now completely revamped to eliminate echoes. Its accuracy of reproduction is also increased beyond what I formerly conceived possible. The things we have done to it!

I am just beginning to live. Even yet my vista is expanding at a terrific rate. A plan is beginning to unfold which may be the answer to every problem facing me when the patrol ship returns. I will discuss it with Mabea soon and get her criticism of its weak points. It seems to me a problem in psychology. She may think differently.

The first month she was with me she nearly wore out the phonograph, playing every record in the library at least twice. Then she discovered the electric organ that is standard equipment on these stations.

She materialized a shapeless Thing with several arms, each arm with many snakelike fingers. In it she emplaced the knowledge of music she acquired from the record library and taught it to play the organ.

Although I know little about music I am sure that Blobbo, as I call it, is musically creative. For hours at a time he will play on the organ; music that the greatest masters of Earth will forever fall short of.

AND Mabea dances to this music, blending her body into the motions of the harmony so that she herself becomes a beautiful, flowing symphony that is the soul of the music itself.

So closely does she attune herself to the music that my mind confuses the two and can't separate the image of Mabea from the sound of the music.

If this station had power to escape the solar system I think I would forget my original plans and blast out into space to spend eternity alone with Mabea and the creations of our thoughts.

She would not let me do that, however, even if I could. My plans have become her plans also, and her will is as great as my own in every way.

She, too, is interested in those secret doctrines from Angkor Watt. She knows more about them than I do, and her knowledge seems to be first-hand instead of conjecture!

Angkor Watt! From this mysterious temple flowed the thought that inspired Moses and later the beginnings of Christianity! It seems to be the hub from which all religion of later times seems to have sprung.

Both the Good and the Evil seems to have come from there. The death of those secret disciples of Evil and the failure to destroy their secret doctrines was not the end of their work.

With Mabea I have traced their history and watched the course of their secret schemings which eventually dominated mankind.

Sometimes I suspected that Mabea may have been one of them. Of the Evil ones, I mean. Certainly her power to use Hate is equal to my own. And she reads the books as if they merely confirmed her knowledge instead of imparted information.

On April first, 2054, the ship will take me back to Earth. I have a little less than seven months left to get ready for the ship.

There are experiments I must perform while I am still out here. Dangerous experiments that might even wreck the station if they get out of control.

If I am to successfully defy the fleets of the present Earth government and defeat them, if I am to rule the System as I plan, and HAVE planned from the start, these experiments must be performed.

* * *

This last indicates quite clearly how

insane Gregory Jones had become. That the experiments destroyed him without wrecking the station is a stroke of good luck for the System and the Patrol. But I simply cannot see how he ever hoped to defeat the forces of mankind single-handed with a machine, even one so powerful as that which he left at his death.

It may eventually prove to be an instrument of warfare powerful enough to defeat any enemy, when we have solved the principles involved in its construction and operation. Even then, however, it will probably take the concentrated efforts of industry and the race to bring it into play against any enemy of the future. One man could do little except make a futile gesture as a bluff, and hope the System would fall for it.

Using the machine as a bluff may have been his plan. Note that the "plan" Gregory mentioned seemed to him to be a problem in psychology.

Gregory's interest in putting down his thoughts in the diary, at all times somewhat sporadic, became even more sketchy during the last days.

There was brief mention on October eleventh that the first experiment (evidently of the experiments directed at perfecting a machine capable of defeating the System) was a success, but that the danger was too great to allow the materialization to remain "solid" for more than a second or two.

In his own words, "The space here in the station is too small for any except preliminary trials. I must think of some way of getting materialization to take place outside, away from the station."

From November nineteenth to November twenty-eighth there were daily entries of no particular bearing on things except that they seem to indicate Gregory and Mabea had become side-

tracked on an issue that interested them at the moment.

Excerpts which are of interest and may be important are given here:

11/19/53: . . . With the aid of the machine I've developed the sense which the books call the psychic sense. There isn't much I can do with it out here. I can "see" the field about a magnet. I can "measure" an electric current in a wire by looking at it. I am beginning to learn to identify the chemical composition of various substances partially with this sense. I have made a collection of small containers, all alike, in which are various substances. Every day I learn to identify more and more of them by just looking at the boxes, and then opening them to verify my "reading" . . .

11/22/53: . . . By means of my new psychic sense I can "see" thought records. I don't remember if I have mentioned experiments of a few months ago on thought records or not. In these, some kind of materialization of thought is implanted on paper. It is invisible and in some ways much like the scratches on a phonograph record that produce speech and sound when run over by a needle. However, the thought record is not a detectable thing. When you look at the paper the thoughts recorded there invisibly implant themselves in the mind and appear as a train of internally induced thought.

With my psychic sense I am able to "see" these thought records as visible thought-o-graphic "writing." It doesn't have form that can be described in geometrical concepts. It isn't vague, though. Its lines are not lines in the strict sense of the word. And the curves and angles are not geometrical but seem to be a form of geometry, not of space and shape. That doesn't make sense, but it is the only way a thought-o-

graph can be described. They appear as "writing" in "lines" of softly luminous light, resting just off the surface of the paper.

That's as close a description of thought records seen by psychic sense as known language and words can convey.

11/25/53: . . . A thought record seems to be an alteration of the molecules of the paper or sheet of metal so that the composite wave they continuously emit is in the pattern of the telepathic wave. . . .

11/27/53. . . . SCIENCE HAS ALWAYS BELIEVED THAT RADIANT ENERGY SUCH AS LIGHT IS EMITTED AS A SINGLE FREQUENCY, AND THAT THE VARIOUS FREQUENCIES EMITTED BY ANY ELEMENT ARE EMITTED INDIVIDUALLY FROM DIFFERENT ATOMS AND MOLECULES. THIS DOES NOT SEEM TO BE TRUE. I HAVE STRONG EVIDENCE THAT LIGHT AND OTHER RADIANT ENERGY IS EMITTED AS COMPOSITE WAVES, OR A HARMONY, OR A CHORD FROM EACH SINGLE ATOM OR MOLECULE. Just as the same note, sounded from a violin and a piano are recognizable by their overtones, the various wavelengths emitted by an atom are a tone and the overtones, simultaneously emitted by the single atom.

11/28/53: . . . Theory seems to be O.K. so far. With our feet on solid ground we are in a position now to plan carefully . . .

AS IS evident, there are things here which may prove of scientific value. I am no scientist, but I believe one of the major unknowns of physics is why a certain element emits certain frequencies of light and not others. Nat-

urally the scientist is not able to isolate a single atom, cause it to emit radiant energy, and measure the wavelength. It may be that the assumption that light is emitted as single wavelength is erroneous, and that Gregory Jones has made at least this one major contribution to knowledge.

When I make that statement I am not forgetting the machine. The more I think of it, the more I feel I should recommend its being placed in the vaults untouched. I have a strong feeling that to even touch its adjustments may set loose unknown forces which may destroy Earth.

There are no entries in the diary from November twenty-eighth to February eleventh, 2054. Then Gregory seems to have opened the diary at random, making the entry near the end of the diary instead of right after the last entry. With less than two months left, that is understandable. From the spirit of the entry on that date it seems probable that neglect of the daily report in the pages of the diary is, or was, due to Gregory and Mabea being too engrossed in experiments to think of anything else.

During the two and a half months of silence preliminary experiments seem to have been conducted with fair success, and the rebuilding of the machine accomplished.

Mass adjustment records during this period indicate that these experiments were in materialization and DEMATERIALIZATION.

On February seventh, 2054, the chart shows that the mass of the station dropped suddenly two thousand tons, thirty and a fraction ounces. This vanishing of mass of the ship itself, for that is what it must have been if the record was not tampered with, lasted for seven and three-tenths seconds.

To tamper with the record sheet,

Gregory would have had to have had the skill of a government engraver who spent his life at the task. The seals were intact on the recorder!

Almost daily there were fluctuations in the mass adjustment chart, indicating the sudden materialization or dematerialization of unknown objects.

During this period the analyzers must have been reconnected to their original banks also. Perhaps Gregory's experiments had progressed to the point where he no longer needed them. At any rate, by February seventh the station was as it should be, so far as condition of equipment is concerned.

Before going into a discussion of the final entries in Gregory Jones' diary I think I should elaborate my reasons for believing that Mabea really existed. The evidence of the mass adjustor can be discounted. It takes a bit of doing, but can be done.

Can it be done reasonably? That is another thing. The seals on the mass adjustor chart were not touched. We even checked on a fingerprint in the seal and found it to be that of the technician who sealed the instrument two years ago. I would also like to point out that the seals on these instruments are of a metal composition that is plastic and sets hard in a few hours.

WOULD it have been possible for Jones to have taken some kind of cast of the seal, then reseal the instrument after his tampering was completed? We have considered that possibility and proven it impossible. Microphotographs of the seal show that its crystalline structure is that of metal after it has set for about two years, and that this structure could not be duplicated in a forged seal. The government engraving in the die MIGHT be lifted from the original seal. Even the fingerprint might be lifted. But the crys-

talline structure of the metal after it has set for two years could not possibly be reproduced in any way. Therefore, it is certain that the instrument has not been tampered with. We must accept the evidence of the chart.

This evidence can be explained ONLY on the assumption that materialization actually did take place, and also dematerialization of ordinary parts of the ship.

If a single pound of mass had approached the station from outer space its approach would have been recorded on the chart and the adjustment of the course of the ship to compensate for it would have also been recorded. The charts show only increases and decreases in the total mass of the station, not the approach or departure of mass from it.

The evidence of the diary itself is very strong. If Gregory Jones had merely stated that Mabea materialized out of thin air, without any preliminary remarks of any kind, it would be more reasonable to believe he was deluding himself.

Jones gives evidence in the pages of his diary of having conducted experiments in the best scientific manner, with a few successes at the end, and many failures at the beginning. It doesn't seem to me to be possible that the events pictured directly and by implication in the diary could be the product of imagination or of self-delusion.

Finally, when we look into the possibility of deliberate fraud on the part of Jones we must ask for what purpose a fraud would be committed. Would any man commit a fraud which involved losing his own life just to create a mystery? And if it is a fraud, ignoring the evidence of the chart seal against such a theory, how account for the dent in the top deck of the station?

I see that I have not come to that dent yet in this report. The dent is mentioned in the February eleventh entry which, as I said before, was entered at random toward the back of the diary. The book mark evidently dropped out and he didn't bother to find the right place in the diary.

2/11/54: Hello dear diary. Have you missed me? Well, your pages are no longer virgin, so like most men I have lost interest in you to a certain extent. You have served your purpose admirably and I know you won't fail me, but remain my slave and servant always, in spite of all.

Everything is done now. Everything except one thing. The last experiment. I almost joined Blotto in extinction in yesterday's final, preliminary experiment. It got a little out of hand and warped the ceiling a little. Materialization of the induced eddy was too rapid.

I think I'll leave the dent where it is. It will be one more thing for them to puzzle over and occupy their time.

The machine is as perfect as it can be made and, although its adjustments are almost impossibly critical, it is capable of almost anything man can imagine.

GREGORY'S spasmodic attempts to keep up on his diary seemed to have suffered a total relapse after this one half hearted attempt. Only one other entry was made, and that just two days before April first. It is a meaningless rambling in metaphysics. Nothing more. It is of importance ONLY because it is the last entry, made the same day he met his end, in all probability.

The doctor estimated that he had been dead for around forty-eight hours when we found him on April first.

The entry is:

3/30/54: What is identity? That

has been puzzling me considerably the past few weeks. The answer to that question must be made before any theory on continuity can be made. Continuity of identity is a phrase that contains only one word whose metaphysical implications are known with any degree of certainty. That word is of. Of denotes possession. It denotes an attribute or the joining of a quality to a thing, a limiting or emphasizing descriptive to a broader concept.

Continuity can be of many kinds. Identity can be of many kinds.

Is the number of three apples the same as the number of three planets? Are there two distinct threes that are the numbers of these two sets? Or is there only one three, so that we may say with metaphysical correctness that the number of three apples and the number of three planets is the same number?

Who am I? Of what does the identity which is me consist? In what way is it continuous? Could it for example be destroyed utterly and recreated? Or would destruction of it be forever, so that whatever might be created after that destruction would not be me?

It might have all my thoughts, even the same atoms, reformed exactly as they were before destruction, but would it be me?

The question seems unanswerable, because if those same atoms were to be collected as they leave my body as waste in the normal process of metabolism, and in a year when my body contained all new atoms, those old atoms which were me a year ago were reformed into an exact replica of me down to the last thought and cell, would there be two mes?

If I could be destroyed, and the reformed replica of me were actually me, then the replica created while I am NOT destroyed would also be me, so

that any number of units which are me could exist at the same time! Then would only I, the original, undestroyed I, be me, or would each of them be me?

I am sure each of me would be convinced that he was the only me and the rest were replicas.

What a problem! And yet it lies at the roots of continuity of identity.

If I lose an arm I am still me. If I fall victim of amnesia I am still me, I hope. By a process of elimination it might be possible to find something which, by its destruction, ends me. Would that be the "me"? And if it were destroyed and recreated, would the new creation be me?

If it were not created for a thousand years I would not exist during that thousand years. Would I then exist again when that essential me were created once more? And if a dozen of them were created simultaneously, which of them would be me? Or would all of them be me?

IS MABEA the Mabea of Angkor Watt? Or is she a replica of that Mabea? If I materialized another Mabea exactly like her would they both be the Mabea of Angkor Watt?

COULD I materialize another Mabea? It might be an interesting experiment, because if I succeeded in doing it she would fight with herself to see which of her would be my mistress and which of her wouldn't. Both of her would be convinced that she was she, if you get what I mean, diary ol' pal.

I rather suspect that there must be some minimum structure of substance which has to be the "me", whose destruction would end me forever, and that "I" continue only so long as does this minimum structure. That would end the problem of simultaneous me's. It might not end the problem of created structures who were convinced they

alone were me.

Oh, well. As they say, it will all come out in the wash. It doesn't make any difference except to me, personally, anyway.

* * *

This is the last entry in the diary. Crazy as it seems, I find myself puzzling over it. It presents a real problem in metaphysics which is baffling, to say the least.

It also gives the first evidence of anything approaching humor that I have ever found in Gregory Jones, and just the type of humor one would expect from him.

It would almost seem that he had a premonition of coming disaster, and that he were trying to solve the riddle of immortality of the soul.

In my own puzzling I have arrived at the tentative conclusion that if "I" reside in the brain and not the soul, then destruction of the brain in death is the end of me, regardless of any continuation of the soul. This is as far as I can go. It is really beside the point in this report, but perhaps of interest in any attempt to get sense out of Jones' last entry in his diary.

What took place in the station after this last entry in the diary? We have the evidence as it existed when we entered the station through the spaceport. We also have the evidence of the mass adjustment chart during those two fateful days.

The physical evidence is simple enough. This is adequately covered by the numerous photographs taken. Gregory's arms were lying against opposite bulkheads, obviously pulled out by the roots and flung against the bulkheads with such force that they were quite flattened.

His skull was burst open as from an

internal explosion. Parts of his torso were practically dehydrated even after two days, and other parts had burst open, with blood spraying out for considerable distances in all directions.

The digestive organs were crowded up into his lungs and his heart was empty of nearly all traces of blood.

The evidence of the body is unmistakable. Gregory Jones met his end in the heart of an ether eddy, or small vortex.

The fact that such a vortex could not possibly pass through the station in the first place because of the automatic reflexes of the station itself which steer it away from such eddies does not refute the evidence.

We can either assume that the vortex formed spontaneously WITHIN the confines of the station, which is not at all impossible, or we can accept the possibility presented by the diary that the last experiment Jones tried was on the materialization in some way of an ether eddy.

That dent in the ceiling, or top deck, was made by thrusts of suddenly applied force, such as from a collision with a mass of many tons, or from the passage of a small vortex through the plate.

On March thirty-first, just thirty-two hours before our arrival, the mass adjuctor chart shows a return to the normal mass of the station.

There was no trace whatever of Ma-bea. If she existed, as seems most probable, she was not in evidence when we got there. There is a vague mention of Blobbo, the organ player having been dematerialized some time before the end.

Aside from all this there was the machine. Made from materials taken from the spare parts storeroom, it looks as conventional as a cabinet radio. There is a wired lock circuit which prevents inspection of its insides.

A thorough inventory of the stock of parts on the station gives a list of missing parts, some of which must have gone into the construction of the machine, but not necessarily ALL of them.

The list of these parts will be appended to this report; for the first materializer, at least, must have been built entirely from parts included on this list.

How many of these missing parts were dematerialized and unknown ones of equal mass substituted to make the final mass of the station correct down to the last decimal is anyone's guess.

After taking the photographs and carefully surveying the ship in every way for clues, we took the machine off and placed it in a stateroom by itself where it can be cast off into space at the pressing of an ejector button.

I recommend that a thorough study of this report, the diary itself, the photographs and other evidence including all charts for the past two years, be studied carefully before the machine itself is tampered with. There may be clues I have missed. There are undoubtedly implications contained in many statements in the diary which might give some insight into the nature of the machine. The machine itself should be at once placed in the vault for safe keeping until such time as it is deemed safe or necessary to dissect it.

END OF REPORT

*CONFIDENTIAL REPORT TO
SYSTEM DIRECTOR by J. A. Lindsay, pers. supvr., E stns. 6/4/54.*

ENCLOSED is photostat of letter received in my office, 5/26/54. Recommend courtmartial for personnel of vault for attempted concealment of events which should have been reported. (The letter). 5/25/54: Dear Mr. Lindsay: Perhaps you will be surprised

to hear from me since you are convinced that I am dead. Yes, I am Gregory.

I'm writing you for two reasons. Most important, I want you as go between in any dealings I may choose to have with the System Government. Least important, I feel the overwhelming desire to crow over the slick way I set the stage for you.

The body you found was not mine, but a materialization. I, and Mabea, were dematerialized partly so that we were not "solid" to ordinary matter. We rode as passengers with you back to the earth.

The key to our problem was to get the machine safely unloaded and still in operating condition, so that we could rematerialize. There was always risk on that score, and UNLESS we could rematerialize we were forever helpless.

The thought-o-graphs strewn through the pages of the diary accomplished their purpose. They planted in your mind reasons for preserving the machine intact and storing it in a safe place here on Earth where we could get at it in our dematerialized state.

Two nights ago we used it. We had a little trouble with one of the vault guards. That was necessary in order to get him to let us out.

When you receive this we will have accomplished our first major objective which you should be able to guess at once from your thorough acquaintance with my diary.

You will hear from me again when I am ready to present an ultimatum to the System Government. This ultimatum as you can readily surmise is unconditional capitulation of authority to me and undeviating obedience to my commands. The nature of these commands and the program I will impose on the System will be given in detail in the ultimatum.

Meanwhile I would suggest that you assure yourself that I still exist, and prove it to the System Government, at the same time bringing to their attention the potentialities for destruction at my disposal. Sincerely, Gregory Jones.

The signature is verified as being genuine. Inquiry at the vault at first brought no information. Threats of official investigation brought out the facts.

On the night of May twenty-fourth at seven P.M. one of the vault guards heard a pounding on the inner side of one of the compartments. WITHOUT checking on the contents of that compartment or even hesitating long enough to phone a report on the unusual occurrence to the vault hub, he opened the compartment to investigate.

He claims he THOUGHT the pounding due to some mechanical difficulty.

He was found unconscious from a blow on the head twenty minutes later by the alternate guard. This guard reported his find at once to the proper centers and first aid equipment was rushed to the spot to revive the unconscious guard.

The swing shift supervisor took over. The compartment was examined and found to be in order. No further disturbance was reported.

Instead of making a report to the office the supervisor squelched the report, considering it unimportant.

At my insistence, after all this was uncovered, trained men were turned loose in the compartment. A dusting of the steel floor of the compartment showed that two people in BARE FEET had appeared out of thin air, apparently, a few feet from the machine built by Gregory Jones and stored in that compartment at the vault.

The footsteps led out of the compartment where they were lost in the corridor after the feet had picked up too much dust to leave whorl traces.

Since no strangers were reported leaving the vault building it must be presumed that they left in the trunk compartment of someone's car at the change of shifts.

The evidence seems conclusive that in some way connected with the properties of the machine built by Jones, that man is still alive and fancies himself a threat to the government.

I recommend emergency measures and haste. There is considerable evidence that Jones might give us trouble.

END OF REPORT

CONFIDENTIAL report to System Director by J. A. Lindsay, pers. supvsr., E stns. 6/6/54: Checkback of all data on Jones indicated most probable immediate objective as parchment roll found in archives of Smithsonian.

Uncovered fact that nightwatchman at their New York building was overpowered night of May twenty-fifth. Since nothing was taken except parchment roll found in Angkor Wat it is certain that Jones and Mabea were the thieves.

Reports of agents indicate that no serious attempt at translation of this scroll was ever attempted, and that no record of its contents is on file.

Have checked in book Jones mentioned in his diary and find Frond at error in his comments. There is no record of a secret group of devil worshippers in Angkor Wat at any time, so Frond's report evidently the product of his own imagination.

Doubt if Jones will obtain any information from stolen parchment that will make him more of a threat than he now is.

Suggest dragnet for Jones anyway.

END OF REPORT

7/1/54: Dear Mr. Lindsay, In or-

der to convince you and the system government that I have power to enforce my demands I plan to do two things. On the night of the tenth of this month the moon will be observed to rotate on its axis an unmistakable number of degrees and then swing back to its original position. No damage will result from this display of force.

On the morning of the eleventh of this month a cone of dematerialization will be started somewhere in the United States of America. This cone will be permanent and continue to expand until the capitulation of the System, after which it will be restored. Gregory Jones.

CONFIDENTIAL report to System Director by J. A. Lindsay, pers. Supvsr., E Stns. 7/8/54: This is to report that Gregory Jones stumbled into my office this morning, a blubbing idiot if I ever saw one. This does not mean that the threat is ended. Rather, it means that the danger is increased. Naturally I can't be sure that the Jones that stumbled into my office is not a materialized replica, just as was that corpse we found in the space station. However, I feel confident that he is the genuine article.

His story makes little sense. He claims he discovered he was being the dupe of Mabea, rather than the future master of all mankind. However, he is so unhinged that most of his remarks are not even rational.

It seems, if we can believe him, that all he wanted was the glory of being master of the universe, but that Mabea wanted the destruction of the solar system and was determined to have it. In their difference of opinion she talked too much and he put two and two together a little too often. The result was a total split.

Since they were both wearing head-

gear which controls the materializer we have conveniently preserved for them in the System vault, the battle took on the form of a clash of wills to see which could dematerialize the other first.

From the fact that he survived it would seem that he won. But we can't be too sure of that. He claims he lost and can't understand why he still exists. He also claims that he won, but that at the last moment he couldn't bear to destroy the one thing in the universe that he loves. Perhaps neither of them can bring themselves to destroy the other.

We have Gregory under opiate and hope to restore his equilibrium so that we can get some lucid information out of him.

I suggest immediate destruction of the machine on the grounds that it is still the instrument of their power. Without it Mabea can't give a demonstration of power, and any attempt on her part to build another machine would lead to her capture if we impose rigid screening of all customers of supply houses.

REPORT to J. A. Lindsay by A. A. Grayson, Drctr. of Vault, 7/8/54: (Dup. of rpt. to System Drctr.) Following instructions I personally put two shots through the machine. When nothing seemed to happen I gave orders for it to be torn through with several bursts from a machine gun. This was done without any sign of trouble. Next, oxy-acetylene torches were applied. Every part of the machine was either melted down or burned completely. No attempt was made to examine the inner parts of the machine as I considered such a procedure too dangerous in view of the unknown nature of its potentialities.

Doctor's report on Gregory Jones, by Dr. O. O. Fischbane, 7/9/54: Patient

completely incoherent. Speech has degenerated to senseless syllables intermixed with a few words. An occasional attempt at ordered thinking apparent in patient's eyes and facial expression. No trace of physical cause such as blood clot.

Degeneration of mind progressing rapidly even under opiate.

7/10/54: Patient died at 6:47 A.M. Nurse in charge was present. She reports that patient sat up in bed, although he was under strong opiate. Rising motion was violent. Eyes opened and stared at her with what she describes as a look of intense hatred. The eyes then glazed in death. Preliminary P.M. indicates brain hemorrhage as cause of death.

Chicago, Ill. (I.P.) July 10, 2054:— At a little before seven o'clock this morning a Whitby roadster leaped from the inner lane on the fourth level north-and-south arterial to plow head-on into oncoming traffic in the opposite lane. Seven cars were piled up before the oncoming cars could react and avoid the wreckage.

Elever were killed and seven injured. The driver of the Whitby roadster was evidently thrown clear and must be one of the dead found lying on the pavement where they were thrown from several of the cars. His or her identity has not been determined yet.

A complete set of clothing for a woman, including nylons and slippers, was found crumpled on the floormat of the Whitby roadster where it had evidently slid from the seat. Every item of this clothing was placed in such a way that it might have fallen intact from a person wearing it.

Persons have been known to be blown out of their shoes in an explosion, but it seems hardly likely that a woman could be thrown clear of her clothing

in a headon collision at a hundred and ten miles an hour. At any rate, no nude female bodies were found on the scene.

The Whitby roadster is listed under the name of Mabea Jones who purchased it from the Whitby Motor Co. on July fifth. The salesman who sold her the car was shown the bodies of those found in the wreckage and positively states that none of them is the woman who bought the car. He describes Mabea Jones as being strikingly beautiful, blond, about five feet six, blue eyes with strangely contrasting jet black lashes.

It seems that either Mabea Jones was not the driver of her car or she was blown out of her clothes and also out of this world.

REPORT to J. A. Lindsay by NABI central office: The enclosed (above) news clipping is the only concrete trace we have found to date of Mabea. It would indicate that Mabea dematerialized in some way while driving a Whitby roadster.

Investigation proved that the roadster was locked and that no hole could be found in windshield or elsewhere through which driver could have escaped. Doors were so bent that it would have been impossible for driver to open one, climb out, and then close door and lock it.

The plexiglass folding top of the roadster was closed and hooked. This can only be done from the inside. Crazy as it seems, dematerialization of driver is only thing that can account for wreck and vanishing of driver.

It is noted that bulletin on Jones shows that he died at same time as accident in news clipping. Since unknown science is involved in this mystery, it may be possible that the time coincidence is significant.

CONCLUSION

The collection of these reports give in detail all that is known of the events leading to the Change. There should be other news clippings added, but they aren't available.

With Gregory Jones dead, Mabea dematerialized, and the machine safely destroyed, we concluded there could be no further danger.

Our hopes were violently shattered on the night of the day Jones died and Mabea vanished. On schedule, the moon began to turn on its axis. With almost imperceptible slowness its topography shifted until the moon had turned forty-three degrees and seventeen minutes. Then it swung back to its original position and stopped.

We at once concluded, naturally, that the mechanism which produced this change had been built and set to operate at a certain time before the end of the partners in evil. If that were so, the demonstration of power would go on without the human agency that started it.

What of the cone of dematerialization? Would that start on schedule also? If it did there would be no human agency to stop it!

A state of emergency was declared. All broadcasting stations ordered the people to search every square foot of the entire country at once. Houses, cellars, vacant warehouses, open fields, lakes, lake bottoms, caves—every inch of known space was covered by twelve o'clock noon on the eleventh. Nothing was found.

At three o'clock on the afternoon of that day a farmer phoned a Chicago newspaper to report what he described as "a queer optical illusion in his south pasture." Reporters, army men, and state police rushed to the scene.

The state police arrived on the scene

first and radioed their report at once. A hole had appeared in the pasture. It was cylindrical and perfectly smooth, as if cut with a disintegrator of some kind.

Its diameter was growing at the rate of a foot an hour. There was no accompanying noise of any kind, nor was there any perceptible movement of the air.

The hole seemed to be bottomless to the observers first to arrive on the scene. None of them cared to lean over into the space where the vanishing was progressing, however, to see how far down the vanishing actually went on.

A horse, evidently alarmed at the growing crowd in the pasture, galloped headlong into the cone of dematerialization and vanished abruptly without a sound. He didn't fall. He simply vanished.

All system officials were ordered to remain at their offices in the hope that Mabea still lived and would present an ultimatum to the System. Capitulation was a foregone conclusion.

No ultimatum came. In twenty-four hours the cone of dematerialization had increased to a diameter of fifty feet and its rate of expansion was increasing slowly.

It was now large enough at the top to measure its depth, which was two thousand feet.

SCIENTISTS were rushed to the scene to make tests and measurements. Each new scientist on the scene seemed to have a different theory than the others. No concrete facts were determined until one scientist with the courage of his convictions deliberately stepped into oblivion.

Ten minutes later he stepped back onto the solid ground again, appearing as suddenly and as startlingly as he had gone.

Before any of the people could get over their speechless amazement he shouted, triumphantly, "Ha! Just as I thought! Reality is relative, just as everything else is. On the other side there is a plateau of solid ground, a pasture with one horse on it. All the rest of the world doesn't exist!"

With that remark he turned and again plunged into the area of dematerialization.

A daring reporter followed him, a look of desperate courage on his face as it vanished. In five minutes he was back with the first pictures of the Change.

They appeared in the evening papers along with a lengthy statement from Dr. Downing, the physicist who had deliberately walked into the unknown. This statement merely reiterated at greater length his conclusions that reality is relative and that only things which have relatively identical existence are real to each other.

As the area of dematerialization grew day by day, all hope of its stopping disappeared. At the same time all fear of its effects vanished. People from all over the world flocked to the border between the two realities and experienced the novel thrill of stepping apparently to destruction over a cliff, only to find themselves apparently stepping from empty space into a new land.

Scientists conducted endless experiments and discovered many startling things. When the diameter of the area of the surface that had vanished was measured from inside the vanished area it was found to be almost ten percent greater.

There were numerous, subtle changes in physical and chemical law discovered by comparison.

To those in the old reality the vanished space seemed to vary in depth.

As the area increased it was seen that a new world of old reality was being uncovered which varied from a thousand feet to several thousand feet in depth. Barren hills and valleys appeared.

Most startling of all, measurements of the mass of the earth from outer space showed that it was decreasing at the rate of thousands of tons a day.

My thoughts are confused, as are those of most of mankind.

DR. DOWNING has a plan and a theory which the System government has O.K.d. He plans on taking a nucleus of men and women with him into the Kentucky Caves and going down well below the depth of the dematerialization zone and staying there until well after the surface immediately above has been occupied by the zone.

Then he plans on bringing his people to the new surface and beginning a new civilization. According to his theory they will not vanish when they get onto the new surface. He claims that if they were to vanish, become a part of the new reality, they would have to occupy the same space as the rock in the new reality and that since that is impossible the new reality will be non-existent to them.

That much of his reasoning seems sensible to me. But he goes on from there and says that what is going on has occurred before in the history of the Earth several times, and will occur again and again. He claims that above us are several of the former "surfaces" of the Earth, and that since reality is relative they are just as real to their inhabitants as we are to ourselves.

He also claims that Mabea was undoubtedly a being from one of these higher realities, and that what is going on was deliberately planned by her, using Gregory Jones and his hate as an

instrument in the accomplishment of her purposes.

I understand little and believe even less of all this. It's too chaotic, too much beyond the realm of reality as I have always been able to conceive it to seem either real or plausible to me, even in the face of all the evidence.

Logic says that when the Change is completed the old reality will be invisible to us. Astronomers report from the Change area that there are several more planets in the solar system that can be seen from the old state of reality, and that all of the old planets, the sun, and the stars are also visible.

Plans are already going ahead in the new reality to visit these newly visible planets.

Some facts observed seem deliberately to contradict one another. For example, one can walk from one reality to the other without going any higher or lower. Yet measurements in the new reality show that the old surface of the Earth as it is transformed will become about two hundred miles greater in diameter than it formerly was.

Dr. Downing's belief that what is going on has happened before has bothered me considerably. I vaguely remembered something that I read long ago that seemed to parallel what is going on. I hinted about my vague memory to the doctor and he found the passage for me. It was the story of Adam and Eve in the Lost Books of the Bible.

"On the third day, God planted the garden in the east of the earth, on the border of the world eastward, beyond which, toward the sun-rising, one finds nothing but water, that encompasses the whole world, and reaches into the borders of heaven. And to the north of the garden there is a sea of water, clear and pure to the taste, like unto nothing else: so that, through the clear-

ness thereof, one may LOOK INTO THE DEPTHS OF THE EARTH."

"And God commanded him to dwell in a cave in a rock—the Cave of the Treasures BELOW the garden."

This parallels Dr. Downing's descent into the Kentucky caves to get below the zone of dematerialization for the purpose of starting a new civilization on the new surface "below" the garden of present civilization.

But what of this "dematerialization of the present world? In Chapter III of Adam and Eve, God said to Adam, "I have ordained on this earth days and years, and thou and thy seed shall dwell and walk in it, until the days and years are fulfilled; when I shall send

the Word that CREATED thee, . . . the Word that made thee come out of the garden, and that raised thee when thou was fallen. Yea, the Word that will AGAIN save thee . . ."

Far fetched when considered as religious legend, but is it merely legend or does it vaguely picture a "history" of pre-historical times? A former Change just like this one?

What of those new planets visible in the new state? They were not just suddenly created with the change in the earth.

I think I will be among the first to visit these new planets and find out a few things.

THE END

Vignettes

OF FAMOUS SCIENTISTS

By ALEXANDER BLADE

Christian Huygens

CHRISTIAN HUYGENS, Dutch mathematician, astronomer and physicist, was born at The Hague on April 14, 1629. He was the son of Constantine Huygens van Zuylichhem, a noted writer and poet, and Counselor to the Princes of Holland.

During his adolescence, Huygens received a thorough education in fundamentals under private tutors, and at the age of 16 was sent to the University of Leyden to specialize in law and mathematics. In 1651 he published an essay in which he attacked the unsound methods of Gregory of St. Vincent in his method of quadratures. This was titled "Theorems on the Quadrature of the Hyperbola," and was a very creditable study for his age and time.

In 1655, Huygens, working with his brother Constantin on the improvement of the telescope, hit upon a new method of grinding and polishing lenses. In 1656, with a telescope of his own manufacture, he discovered the first of the nine satellites of Saturn. He was also in that same year the first effective observer of the Orion nebula; he delineated the bright region still known by his name

and detected the multiple character of its nuclear star.

In the following year he introduced the principle of the pendulum in the art of clock making, and some years later, the spiral spring in the manufacture of watches. His application of the pendulum to regulate the movement of clocks sprang from his experience of the need for an exact measure of time in observing the heavens. The invention dates from 1656. On June 16, 1657, Huygens presented his first "pendulum-clock" to the States-General; and the "Horologium," containing a description of the requisite mechanism, was published in 1658.

In 1659 he published his "System of Saturn" in which a complete description of the rings was given, as the result of observations made through a telescope of 22 feet focal length.

His reputation now became cosmopolitan. In 1660, at the invitation of Minister Solbert of France, he went to Paris, was given quarters for his studies in the Royal Library, and made a member of the Academy. In 1663, while on a visit to England, he was elected a Fellow of the Royal

Society of London. Returning to Paris in 1665 he made it his home until 1681; when, recognizing that the disposition towards the persecution of Protestants in that country was growing, and anticipating the revocation of the Edict of Nantes (which gave them protection), he returned to Holland and remained there during the balance of his life.

WHILE living in France he demonstrated the laws under which force is transmitted from one body to another through impact; wrote and published a treatise on the laws of the refraction of light through transparent and translucent material; a monograph on the nature of the cycloidal curve, and another on centrifugal force as exhibited in circular motion around a fixed center or axis. Finally, in 1673, he gave to the world his great work entitled "Horologium Oscillatorium," in which the principle of the pendulum was exhaustively studied and applied, in marking divisions of time, and in the determination of latitudes.

On his return to his native land he undertook the construction of a planetarium. He spent six years on the production of lenses of enormous focal distance, which, mounted on high poles, and connected with the eye-piece by means of a cord, formed what were called "aerial telescopes." Three of his object-glasses, of respectively 123, 180 and 210 ft. focal length, are in the possession of the Royal Society. He also succeeded in constructing an almost perfectly achromatic eye-piece, still known by his name.

But his researches in physical optics constitute his chief title-deed to immortality. He developed

the wave theory of light which had already been adopted by Hooke in 1665; he assumed that all the points of a wave-front originate secondary waves, the aggregate effect of which is to reconstitute the primary disturbance at the subsequent stages of its advance, thus accomplishing its propagation; so that each primary wave-front is the envelope of an indefinite number of secondary undulations. This resolution of the original wave is the well-known "Principle of Huygens," and by its means he was enabled to prove the fundamental laws of optics, and to assign the correct construction for the direction of the extraordinary ray in uniaxial crystals.

HUYGENS died in 1695 at The Hague, bequeathing his manuscripts to the University of Leyden. He never married. Three years after his death his "Cosmotheoros" was published. This was a highly speculative and rather fanciful monograph, in which the suggestion was advanced that some, or perhaps all, of the planets of the solar system were inhabited, either by humans like ourselves, or by intelligent creatures of a similar kind, with bodies modified to conform to the special conditions of their environment.

Huygens was an aristocrat of the best character and kind. His disposition was that of a quiet and somewhat reserved gentleman, with the inclination to use his own hands in experimentation, and equipped with a mind capable of interpreting results with much acumen. In several of his monographs he approached the vision that later blossomed in the mind of Newton on the law of gravitation.

THE END



A MAN-CARRYING KITE



By CHARLES REEVES

ONE of the more interesting German technical developments to come out of the war is a man-carrying kite. Men have been trying to develop a kite large enough to carry a human for about as long as men have been thinking of flying, but until this present German invention progress has been rather slow. The German kite is a wind driven autogiro mounted on a horizontal tube and controlled by a few simple levers. It looks something like the conventional autogiro without motor or fuselage. The machine only weighs 180 pounds and is very easy to fly. It has the added advantage that it could be dismantled and stored in a small place. This is necessary as the kite is designed to be towed behind German submarines as an elevated observation platform.

The pilot sits straddling the tube, strapped in by a safety belt to his seat. All that is needed to go aloft is a wind speed of 17 miles an hour. The combination of the sub's forward speed, and the

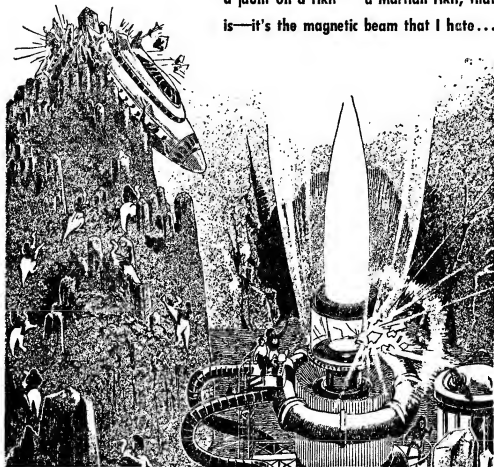
speed of the wind usually gives enough wind-speed to lift the pilot off the deck. He is connected to the deck by a cable which contains a telephone wire, and can give lookout reports covering practically the same area as an airplane. The kite has several safety devices. In case of an emergency he can release the cable and drift to the surface. If he is in immediate danger, a lever causes the rotor to fly off and a parachute to open automatically. He then gets rid of the rest of the kite by releasing his safety belt.

Kites have been used before to carry cameras, weather instruments and so forth, but this is the first time that one has been made that can sustain a human for any length of time. Back in 1894 a British officer made a massive kite that carried him to the height of 100 feet, and on a calm day he could go aloft by being towed behind a wagon, but this German invention is believed to be the first kite used in war.

The Rikits of Mars

by **DON WILCOX**

Even if I am a Senator, I can enjoy
a jaunt on a rikit — a Martian rikit, that
is—it's the magnetic beam that I hate...



A flash of fire burst out from the middle of one of the towers. It was an awe-inspiring

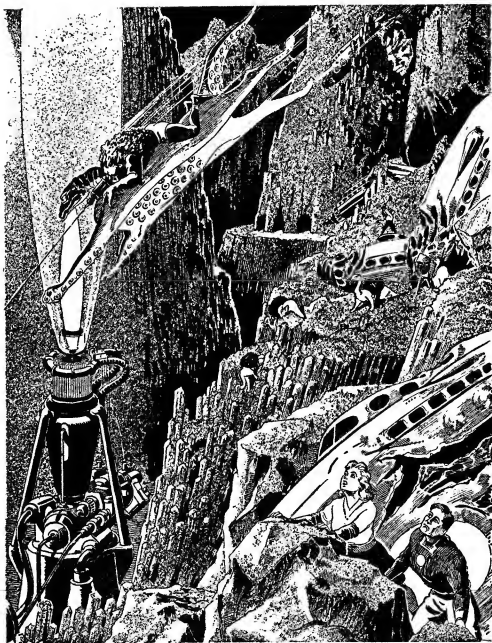
THE door swung open and all seven of us around the conference table found ourselves facing a wild-eyed man with a gun.

"I oughta kill the whole damn lot of you," he yelled. "But I'll give five of you the benefit of the doubt."

McCune, the chairman, leaped to his feet and started for the intruder. "Drop that weapon. You don't *dare*—"

"*Don't* I? You're number one, McCune!"

The bark of the pistol sounded, hardly as loud as the wild-eyed man's angry



sight and so satisfying. We had waited a long time for this incandescent blaze of light!

words. It spoke four times like a trip-hammer. McCune fell forward, clutching his heart. Just beyond him Romanoff slumped down in his chair with quick little coughing cries.

"Stand back, you, Pollard. I don't want to have to kill you," the madman

warned me. He swung the door and it banged shut after him.

At eight o'clock that night Mrs. Pollard and I saw the chase in the movies. Some alert cameraman had followed the Capitol guards down Pennsylvania Avenue, and once, according to the run-

ning comment, we had a glimpse of the criminal's car swinging off the avenue making an escape.

My own statement to the press had also been picked up by the cameraman.

"Here is Senator Roland Pollard, who recognized the murderer of his two colleagues to be a space-ship mechanic known as Patchy Black," the commentator said. "Black's son was a recent victim of a ship that crashed over Mars. Because of many such crashes, the senate committee has been investigating . . ."

Then came my own statement: "Senators McCune and Romanoff lie dead. Their assassin was Patches Black. I saw it happen."

"What's back of it, Senator Pollard?" the interviewer asked.

"He was crazed by the death of his son in a space-ship accident over Mars."

"Would you say he was insane?"

"Insane is a meaningless word," I replied. "He was shocked out of his reason. He had written threatening letters to the investigating committee. He accused us of criminal negligence. I have been trying to get action . . ."

"How do you think this will affect the committee, Senator?"

My answer came forth with far more conviction than I use in my campaign speeches. "The committee will get to the bottom of this trouble, you can tell the people that. If spaceships are crashing on Mars because they're not being built right, some builders are going to find some cozy cells. It it's something else—but wait, we'll see—"

"Thank you, Senator Pollard."

That part of the movie gave my wife such a thrill that we stayed to see it the second time. In fact, we tried to start a little applause, as any free citizen has a right to do in the movies. But that was a mistake. A dozen boos

came back at us, and someone in the row ahead craned around and, raising his eyebrows, whispered, "Look, it's the senator himself."

So there was the public temper. What the death-trap manufacturer was getting away with had become major trouble for us slow-moving senators.

From that moment I pledged I'd give the country some action.

On the following Monday I boarded the Blue Palace for Mars.

CHAPTER II

The Mad Valet

THE *Blue Palace*, cruising through space, was living up to its reputation for fine service. Guards, stewards, bartenders, waitresses, musicians and crew members presented such a variety of dazzling uniforms that my eyes were swimming with color when I left the observation deck to retire.

Another uniform followed me into my private suite.

"I am to be your valet, sir."

"I didn't order a valet," I said. "If I'd wanted one I'd have brought my own. I've come alone—"

"Shall I take your coat, sir? There, the door is locked. I'll bring you a drink, sir. Are you enjoying the voyage?"

I studied this man skeptically. I didn't mind the severe black suit with the blue trimmings, or the stiff white shirt front over his athletic chest. What I didn't like were his thick, drooping mustaches, his false nose, and his glittering black eyes.

"Patchy Black!" I said. "What the devil are you doing here?"

"You may call me Fred," he replied, never batting an eyelash. "Here is the evening paper, sir."

"You can't stay here, Black. You're

wanted for murder. Why, you fool, you've walked right into the chair."

I reached for the telephone. Patchy Black laid a heavy hand on my wrist. His other hand slipped down the side of his coat to the blue-trimmed pocket. I noted the slight twitch of his thick brown fingers.

"There's no hurry about it, Senator Pollard. I'll be right here on the ship for the next two weeks. I'm your prisoner incognito, shall we say?"

I stared at him, and what my lips didn't say my eyes must have said.

He replied to my unspoken words. "You're wrong, Senator. I'm not going to kill anybody. You don't have to be afraid of me. I got the two I was after."

I didn't answer for fear of antagonizing him. His hand rested at the bulging pocket. Frankly, I was so scared I could have taken a parachute jump right out into the black void.

"I want to talk with you, Senator Pollard." A hint of pleading softened his threatening tone.

I withdrew my hand from the telephone. "Sit down, Patchy . . . All right, pour yourself a drink . . . Now, come to the point."

"You and I see a lot of things alike, Senator," he began, settling down in an overstuffed chair where he could eye me across the table. "We came up through the same public school and the same school of hard knocks. You know, I wouldn't be a senator for all the money in the world. I know that you wouldn't be a space-ship mechanic. But we both know what's right and what's wrong."

I WONDERED if he had thought of that when he committed his murders.

"Now I'll probably go to the chair," he went on. "And you—well, you'll

probably get to be grand ambassador to Mars after this excursion. But you won't forget me. And sometimes in your honest moments you'll secretly *thank me* for putting Romanoff and McCune out of the way."

"Why, that's nonsense. They were among my closest associates in Washington. We were on committees together. We lunched and banqueted—"

"Yes, yes, yes. I know all that. But in your heart, Senator Pollard, you stand for what is fair and square," Patchy said calmly, removing his false nose and mustaches and fixing his mad eyes on mine. "I know because I grew up with you. You know that our country is better off with your two beloved colleagues out of the way."

"I know no such thing!"

Patchy Black came to his feet. "Who blocked the action of your investigating committee?"

"All of us were too busy—"

"Do you spell that with a 'b' or a 'd'? What was back of that delay, Pollard? What were the investment tie-ups between Romanoff and McCune and the mystery on Mars that turns spaceships into death-traps?"

"I've heard there were some deals, but no scandal has been proved."

"I've tested materials and when I've found them faulty I've reported the facts." Patchy planted his fists on the study table. "Still we have crashes galore. Do you know what you're going to find when you get to Mars? Do you, Pollard?"

"I'm going with my eyes open."

"What do you think it means when our government funds go to pay for space freighters that crack up on the Martian mountainsides? Three months ago—"

A knock at the door interrupted my valet's fiery oratory. He hastily donned his false nose and whiskers, at the same

time talking on in a low voice.

"Three months ago we were losing one ship out of nine. Now it's one out of seven—and every pilot is somebody's son. Here we are, nominally at peace with Mars—"

The knock came again. Patchy finished with a whisper. "Someone in the U.S.A. was damned sorry when I shot Romanoff and McCune. I don't know the inside of this game, but this someone wants the U.S.A. to lose every cent she's spent on Mars. You'll admit that much, Senator?"

"Someone's knocking," I said tersely.

"You don't deny it, then "

"Will you answer the door?"

"You can call me Fred."

"Answer it, Fred."

"Very good, sir."

CHAPTER III

The Mystery of 77

MY "VALET" returned with a note for me signed by my very good friend Vorumuff, a noted Martian interpreter.

"Read it to me, Fred." I handed it back to him.

"But it might be personal."

"Read it," I repeated. "I wouldn't keep a prisoner on the premises that I couldn't trust."

The look that Patchy Black gave me was a half-frightened smile, full of the understanding of his new responsibility. We knew from that moment where we stood.

"It says, 'The Honorable Senator Roland Pollard. Dear Friend: I have just learned that you are among the passengers of this voyage to my planet. May we—Vedo and I—have the pleasure of your company for lunch tomorrow in the privacy of our suite? I am

sure we shall have much to talk about. Most respectfully, Vorumuff.'"

I fixed Fred up with a notebook to keep a list of my appointments and assured him that tomorrow noon was reserved for Vorumuff and his wife. Then we called it a day and slept through several thousand miles of space.

The noon engagement with Vorumuff and Vedo didn't pan out. As a senator I've learned that one appointment in twenty falls through, so I wasn't inclined to think of this incident as a symptom of any deep troubles.

I went to suite number 77 at high noon—as chimed by the Blue Palace's bells, not as indicated by the sun, for that very remote and sick-looking yellow ball made no visible changes after we left the earth's atmosphere.

I knocked at 77.

Vedo answered. And I caught my breath, as I always do when I see one of these rare Martian beauties. They are so unearthly beautiful, yet so utterly feminine that one cannot quite believe his eyes at first.

(Even the most dignified of us senators will occasionally make observations that are not entirely political.)

Vedo was tall—she stooped slightly to keep from brushing her hair against the top of the doorway. Her bare arms were full-muscled but graceful of movement. Her blue eyelashes like butterfly wings rose and fell slowly and continuously, as is the way with Martians when they are conversing.

In her broken English she tried to explain that something had occurred which had set aside the luncheon date. There's no one so hard to understand as a Martian who hasn't learned our gestures and facial expressions. From the puppet-like movements of her thin orange lips and peachskin cheeks I wasn't sure whether she intended a

smile or a frown.

But she groped for words until I finally got it.

"Vorummuff, men have took away . . . no dinner bring . . . Why he not come back . . . I don't know."

"Don't worry, Vedo. He'll be back," I said, smiling. "Which man was it that took him?"

"Why he not come back I don't know," she repeated.

"You know he's here on the ship. So there's nothing to worry about."

"No dinner bring," she said. "I don't know."

SHE had searched hard enough for those words that she meant to make the most of them, and might have kept it up for minutes. I gazed at her, thinking how well that silky tan dress went with her orange lips and blue eyelashes. Looking at her, it wasn't easy to remember how fierce and barbaric and superstitious some of the Martian tribes were supposed to be. The first few expeditions of Earth men sent under the guidance of the United States Department of Space had declared we'd never be able to transplant our civilization on Mars. But now the job was begun, and such promising products as Vorummuff gave the government hope.

"No dinner bring no dinner," said Vedo, enlarging upon her original theme.

I gave her a farewell wave and started on my way.

The strange thing happened just as she closed the door.

Something knocked me back against the wall. I struck my left knee-cap an awful blow. And my pride took a first-rate bump, too. Things like this didn't happen to Senator Pollard. I whirled around, ready to give someone a good cussing.

But no one was there. I hadn't been pushed by a person, but *by an invisible force*.

"I must be going nuts," I growled to myself. "I can't even get up. Must have busted a mainspring."

Then I did get up, feeling like the proverbial rusty hinge.

Smack! Off I went again!

As before, I crashed against the wall of what was undoubtedly the Martian suite, and for a moment it seemed as if I couldn't push myself away. If that wall had been an electro-magnet and I had been a chunk of steel, I could have understood.

A steward marched down the corridor. I hailed him.

"Help me up, you. What the devil is making this ship lurch this way?"

"You must be mistaken, sir. She's on a steady course." The steward walked around me. "You must have tripped, sir."

"Help me up, I say."

The steward looked down at me helplessly as if nothing short of a hoist would do in such an emergency. "I was looking for you, sir," he said, exerting a negligible lift at my arm. "The Bells are anxious to meet you—Bob and Betty—"

Slip! Crash! Another Earth man hit the Martian wall! I mean the steward took a header and struck face first. My two hundred pounds followed.

The steward squirmed and gave me a frightened rabbit look.

"I didn't do it," I said.

The steward stared up and down the corridor. He whispered, "Let's get out of here. This place ain't healthy."

He started, but he looked back when the door of 77 opened. He froze in his tracks and gaped. Vedo was looking out at us.

"You knock," she said, evidently

meaning it as a question.

"We fell," I said, feeling most ridiculous.

"Something make you fell? . . . Aw!" Her exclamation I took to be Martian and highly spontaneous. She ran out of sight, squealing like a cannibal that forgot to turn off the roaster.

Back she came, jabbering, and there we stood before the open door rubbing our bruises like a couple of acrobats stymied by a mat full of tricks.

We walked away, the steward and I.

"Now you all right," he mimicked, after the door was closed, and you should have seen his flabbergasted face. "You don't catch me in that corridor again. These doggoned Martians carry their own ghosts. I'm not kidding."

CHAPTER IV

The Captain Looks Sharp

THE Bells and I made a tour of the ship that afternoon—a personal treat from the captain for what he called his most celebrated passengers. He might have included Vorumuff and wife. But his heart was a trifle stony toward Martians, according to the gossip of the ship.

Bobby and Betty Bell were a lively and attractive pair of youngsters.

As a vibraharp team they were reputed to be the world's best.

The "Musical Bells"—as they were billed—were on their way to Mars to spend six months playing in the new American theatres there. The newspapers had worked up a lot of exciting publicity over their trip. Was Betty Bell no longer merely her stage name? Had she and Bobby Bell been married? Wedding bells for the Musical Bells and a honeymoon to Mars?

No one knew the answers. The gossip columns continued to hint of a feud

between Bobby and his stepmother-in-law-to-be, the well-known socialite, Mrs. Sarah Windblow Weeks. As Betty's legal guardian, Mrs. Weeks had twice thrown a monkey-wrench into the wedding bells. She always traveled with them.

This afternoon Betty and Bobby had escaped from all such impedimenta as a stepmother, vibraharp and reporters. They took me in hand, as only gay youth can take us oldsters in hand, and I'll declare twenty-five years fell off my age as we toured the ship together. They had a line of gags to keep the captain and me laughing, and I forgot all about the recent wave of troubles and mysteries.

We passed through the control room, met the white-uniformed pilots—all young men with steely eyes and sure hands—viewed a chart illustrating the ship's ten synchronized rocket motors, followed the winding stairs down to the cargo rooms just above the ship's gravity floor.

Chiefly a passenger ship, the Blue Palace carried only small items of cargo—a variety of tools, precision instruments, midget radios, telephones, electric motors, dyes and chemicals. The heavier freight to Mars was being handled by the government-subsidized ships, and it was among these that the crack-ups were occurring.

The captain made a passing reference to these freight catastrophes. I started to question him for his opinions. But just then a gravel-voiced steward limped down the steps and asked the captain's permission for a private word.

"I'm sorry to disturb you, Captain MacMurray—"

"Well"

"There's a rumor circulating that we have a stowaway aboard."

"Nonsense! Our lists have been checked. I've accounted for everyone.

How could a stowaway get in?"

The limping steward glanced at us and edged away.

"I don't know, sir. But if he is in, and he might be dangerous—"

That was all I heard, for their voices suddenly lowered to whispers. The captain's eyes swept the cargo room and turned an alarmed look in my direction.

I knew what he was thinking. A few days ago I had been one of five Senate investigators to escape murder. Today I was in his care. And here we stood in the cargo room that would afford a criminal an excellent hiding place.

"I very much regret this interruption," the captain said, striding back to us. "A little matter has come up—a trifle—nevertheless I must attend to it at once . . . Oh, George, will you conduct my guests to the art room? . . . And now, if you will excuse me—"

This particular George turned out to be so damned conscientious about showing us the art room that I thought I'd never get away. Patches Black ought to be warned. The hounds had picked up his scent, and if they found him in my suite, they would jump to one of two conclusions: Either that he was waiting to murder me, or, if he showed them proof that I'd accepted him as a valet, that I had been in league with him all along and was therefore the real perpetrator of the senatorial murders. What a sweet scandal that would make! Ye gods!

"I've got to get out of here," I said.

So the Bells and I ditched the accommodating George.

A few minutes later, after I had arranged to meet them again, I ditched the Bells.

I strode down the corridor—clear sailing at last, I thought. But as I passed suite 77, the thin, singing voice

of a female Martian intercepted me.

"Senator man—"

"Well?"

"You see Vorumuff?"

"No, I haven't seen him."

"Not come. No dinner bring—"

"All right, all right. I'll get someone to help you right away."

One more turn and I reached my own door.

It stood open. I could hear voices. The captain! He had entered my suite and found my valet. He was doing the talking and Patches Black listening most respectfully.

CHAPTER V

Martian Stew

ONE thin ray of hope shone through this spine-chilling scene: Patchy Fred Black was still wearing his nose and mustaches, and I'll swear the way they fit him not even a captain's sharp eye would suspect them to be false.

"There," said the captain, "you follow those orders and you'll have no troubles. Is everything clear?"

"Yes, sir."

The captain, turning, spied me standing at the door. I don't know whether he could tell that my knees were rubber and my spine was ice. He passed me with a cordial smile.

"You'll pardon me for entering your room during your absence, Senator. This unusual circumstance—the possibility of a stowaway—prompted me to take a few precautions. Your valet, I'm pleased to say, is well qualified to serve as your bodyguard when you are here alone. He has come to us with excellent recommendations. Good day, Senator."

The door closed. I dropped into the first chair and closed my eyes.

"A damp towel for your feverish

brow, sir?" said Patches.

"Thanks, Fred; have one yourself."

"I'm quite cool, thank you," he said.

"I've just been instructed how to take care of you in case there's someone aboard our ship who might make so bold as to—"

"Yes, I know. They're on your trail, Patchy. There's not much we can do about it."

"I've been advised to stay in your suite as much as possible to be sure no one enters. The captain found I was willing to cooperate."

"That's a break. The first time you parade that false nose around the observation deck someone's going to recognize you and start shooting."

The phone rang. It was Vedo. Her good man had come back at last, but he hadn't brought any dinner, and he wasn't himself.

I went right over to see what had happened.

I found the big Martian lying on the floor, his long legs hooked over a chair and his big, muscular arms waving rhythmically at the ceiling lamp, his throat pouring forth some rollicking sing-song notes from a Martian folk-song.

"He lead army," said Vedo helplessly. "His song lead army."

"He's drunk," I said.

"Why he so heavy? I can't lift."

"He's two hundred pounds of soused Martian, sister."

"Why?"

"Was he ever this way before?"

"No."

"I'd bet my socks someone's played a trick on him. Where's he been?"

She didn't know. From his song she would say he had been leading an army. But she hadn't seen any army. She hadn't seen anyone but me and that steward who fell into the wall.

It was several hours later—the next

earth day, as the clocks chimed—when I got a half-coherent story out of a sobored Vorumuff.

"The earth is full of tricks," said Vorumuff in his precise English, and he fixed a practiced grin on his face. "I still don't know all of them."

"Did they pull a fast one on you, Vorumuff?"

"What they gave me to drink looked like water."

"Plain water, eh?"

"*Lively* water. Water with bubbles. Then—" Vorumuff whirled a finger around his head—"such a spinning. I thought the ship was doing spirals around the Juve."

"*Juve?* Is that anything like the jive?"

"The Juve is, the great signal tower in the mountains of Mars. As I was saying, round and round I went." Vorumuff got up and danced around to show us, bending his handsome head and shoulders to avoid striking the chandelier.

"Then what happened?"

"I began to talk," said Vorumuff. "They asked me questions about Mars, and I gave them great, wonderful answers—so wonderful I don't know whether they are true or not."

AT THIS Vedo caught his arm and said something to him in Martian. He turned to me.

"Vedo asks if I told any of the Martian secrets."

"Did tell?" Vedo pursued, tightening her grip on his arm.

"When I drink the bubbly water there are no secrets!" Vorumuff declared. Then he gave us an amazing outburst of Martian laughter, up and down the musical scales of his clear, fine voice.

Vedo didn't like it. "Did tell?"

Her urgent manner alarmed me. But

Vorumuff couldn't take her secrets seriously.

"Vedo came from the mountain tribe of the Seventh Point," he said to me, "one of the most superstitious of all the Martian nations. She is unduly concerned with keeping the military ambitions of the Seventh Point a secret. It adds to the prestige of her people."

This was true, I realized, for each year the American capitol on Mars respected the march of the Seven Point natives to renew our lease on their lands.

"I'm curious to know," I said, "who it was that wanted all your secrets."

"Some fat earth man with fat bill-folds. I didn't ask their names. They are men from the tall skyscrapers of New York and Vienna and Rio, who plan to build tall skyscrapers in Mars."

"Promoters, no doubt," I suggested. "Perhaps real estate experts. Did they try to make any deals with you?"

Again Vorumuff gave way to laughter. "They make the most wonderful promises. They will make the rivers of Mars run with the bubbly water."

"By George, I believe you took a fancy to that champagne or whatever it was."

"Whatever it was," said Vorumuff, "it had the kick of a *rikit*."

"Rikit?" I echoed. "Is that anything like a cricket?"

"Don't you know what a *rikit* is?"

"Here we go again," I groaned. "All right, I took the cork under, so go ahead. Give me the works."

Vorumuff turned to Vedo. "He doesn't know what a *rikit* is."

"*He fall down from rikit*," said Vedo.

The Martian looked rather alarmed. He began to question me. What had happened? Had an invisible force drawn me off my feet? Had I suffered any injuries? If so, he was very sorry.

"But as you will learn when you get to Mars," he said, "rikits will be rikits."

This was all too dizzy for me. But right away I learned. The tip-off came when a steward wheeled a tray of food into our presence. One glance told me that here was food enough for six persons. There were only three of us.

When we gathered around the table in the adjoining room I could hear, from one of the bedrooms, the slow measured pacing of feet. The door of that room was open, but two bars across it formed a sort of gate—enough to keep a well-trained horse from trying to get out.

Since the floor was of plastic, it was evident that the soft sounds of pacing were not shoes of hoofs, but some variety of padded feet.

"Don't be afraid, Senator Pollard," the Martian said, observing my apprehension. "Please eat."

I ate, but I kept one eye on the open door. Presently the pacing slackened and stopped, and I could hear the animal's slow, gentle breathing.

"That must be an awful big dog," I said, gulping.

"Big dog!" Vedo repeated. Then she burst forth with laughter patterned after Vorumuff's, only much more delicate and mysterious. "Big dog!"

"You never saw a dog that could jump like our Martian rikits."

Just then the beast stuck his big yellow head out at us, and you never saw a senator that could jump like I jumped.

The lunch ended then and there. Vedo Vorumuff caught me before I got out the door, and they both begged me not to be frightened. They led me to the barred door, and before I knew it I was patting this weird-looking domesticated dragon on the nose, saying, "Nice rikit, nice rikit."

CHAPTER VI

A Jolt from the Earth

"YOU should feel greatly honored, Senator Pollard," said the tall Martian with a pleased smile. "The rikit is one of Vedo's great secrets. We have gone to great pains to keep this pet out of the public eye in our comings and goings. But Vedo is willing that you see him."

I accepted the compliment without taking my eye off the dragon, who returned my gaze with evident curiosity.

"I think he's contemplating a senator steak, rare," I said.

"He does look rather hungry," said Vorumuff. "But naturally. We forgot to give him his lunch. You'd better stand back until I serve him. He's a bit peevish before eating. . . . There. Watch him go after it. The poor fellow was starved—*Look out!*"

Darned if the big brute didn't snap at me. Lucky for me that I was on my guard or I'd have lost my best campaign arm.

The two Martians gave the little fellow a scolding in the language he understood, and it upset him so much (as they told me afterward) he could not finish his lunch. This may have been because he didn't get what he wanted—and in a way I felt rather sorry for him.

When I got back to suite number 25 I told Patchy Black all about it. Patchy needed cheering up. He was brooding over his very black future.

"If that rikit could only have had a chance at Senators Romanoff and McCune, I'd have spared myself a lot of trouble."

It was a mirthless jest, and we both fell silent. Patchy gazed out at the distant sun, almost swallowed up by the thick blackness of space. He mum-

bled disconsolately that he wished it would shine like it used to.

"You blacked it out for yourself, Patchy," I said.

"The scoundrels that sent my son off in an eggshell ship blacked it out for me," he snapped savagely. Then he got a grip on himself, rose and came toward me. "You may call me Fred, sir. Would you like a drink, sir? What was it you were saying about the dragon, sir?"

"A most remarkable beast, Fred," I said, taking a glass from the tray. "It can understand more Martian words than I can."

"A matter of conditioning, I presume, sir." Fred gave a low chuckle. "Remember when we were kids, Senator, and old man Brichacek on the edge of town would talk to his cows? Those cows could understand more Bohemian than you or I. The more he talked, the more milk they gave."

"I remember. Those beasts actually mooed in Bohemian. But you haven't seen anything until you've had an eyeful of this big yellow tiger-dragon."

"Do I understand," said Fred, "that it was somehow responsible for your smacking into the wall yesterday? If so, how?"

"That," I said, "is a little Martian secret."

Three or four days later we cruised into a zone of radio reception from the American stations on Mars. A few fragments of news filtered in, mostly good.

The accidents among space freighters had diminished, we learned. A new space-port hotel at Marshington was almost finished. Its dedication would take place within twenty-four hours after our arrival.

Radio reception from the earth was fast fading, but one of the last communications to come through, on our sixth

or seventh day, gave the passengers of the Blue Palace a hard jolt.

I was enjoying the comparative solitude of suite 25 at the time, but I'm sure that many of the passengers were listening at the big speaker on the observation deck.

THE captain came to me at once with the news.

"It's about that stowaway," he said. "We know who he is."

"You *know*?"

"We know. The proof has just come in from Washington." The captain caught me by the elbow and took me into a huddle over my study table.

"Just a moment," I said. "Fred, will you bring us drinks? . . . Ah, here you are, captain. Shall we drink to the early capture of your stowaway?"

"Capture? You mean *execution*. I'm the law on this ship, you know."

"To justice," I said, and we drank. Fred took our glasses. The captain waited until he had gone out. Then—

"It's a break for the Blue Palace, Senator. We'll make sensational headlines on two planets. This stowaway is dynamite. You'd never guess—"

"It must be the man that murdered McCune and Romanoff?"

"How'd you guess it?"

"Well, I—er—he just happened to be on my mind—"

"I tell you, Senator, it's the break of a lifetime if we pull the right strings. You, being a Senator, ought to know which strings to pull."

"Just a minute," I said, feeling that an avalanche of schemes was about to roll me under. "Have you found him?"

"Yes, of course. We know right where he is. A man can't stay hid on a space ship. Not if I'm the captain."

"Well, this is news," I said. "Is it generally known that you have him be-

hind bars?"

"Certainly not. Nothing has leaked to the passengers. The fact is, we don't have him behind bars yet. But that's a minor detail. We know his hiding place."

"Oh," I said. Not much of a comment, but I managed to choke on it.

"You don't seem to share my enthusiasm. Have your man bring us another drink and I'll tell you my plans for the execution."

I groaned and mumbled. I knew that the captain's victim was hearing every word, and I found myself trying to talk about the weather when there wasn't any weather, the time of day when there wasn't any day. Meanwhile the captain bore down on me with his execution plans—a big event, as he visualized it, to climax the voyage.

Fred brought in more drinks, as calm as a plumber in a flooded bathroom. Somehow I managed not to turn over my glass.

Fred, bless his heart, placed a damp cloth over the back of my neck before he went out. The pleasant chill sent an inspiration to my brain.

"Where," I murmured weakly, "is this murderer hiding?"

"That," said the captain, with a strange gleam in his eye, "is my own little secret. . . . But don't worry Senator, you'll get your share of credit. You're the one who will identify him."

"O-o-oh!" I groaned.

"Are you sick?"

"No, I just had a very happy thought. If we want to reap the most votes—er—I mean publicity—"

"Yes?"

"We should have an audience of ten thousand for this little occasion."

The captain frowned. "We have less than a thousand on board, crew and all."

"Then we must wait till we land. There'll be thousands at the dedication of the new hotel—Americans and Martians both. We can run our show in right afterward—the first Martian execution for an Earth crime."

The captain scowled and sauntered to the door. "I don't know about that, Senator. I'll think it over." He turned to Fred, who had stepped up to open the door. "It would be a little risky. Don't *you* think so?"

CHAPTER VII

Footsteps Outside

THAT was one awful argument I got into one noon down in the rathskeller. One certain elderly lady with a talent for speaking her mind made me sore when she said that all Martians should be lined up and shot. I quarreled with her over that word *all*. "You're an extremist," I said.

"Maybe that's why I never got to be a senator," she snapped back. Then the battle was on.

I may occasionally lose an argument *during* the argument, but when I tell about it afterward I always win. I relayed this one to the Musical Bells and found they were intensely interested.

Bobby wanted to know what the woman looked like, and Betty asked what she had on, and they both asked about her manners.

"She's in high society—but in the most obnoxious sense of the term," I said. "She probably attends the charity balls, but I'll bet a dollar she cheats her chauffeurs and maids."

"Drop in sometime, Senator," said Betty, giving Bobby a wink, "and meet my stepmother."

Then I got it. Yes, that's who she was. Money, arrogance, a sharp ton-

gue, a gift for trying to run other people's affairs—I should have known she was none other than Sarah Windblow Weeks.

The amazing thing was that Betty and Bobby were tickled pink to know that we had clashed and that I was on their side. Their vibraharp program that day was a classic of high spirits. And afterward, over coffee cups, they told me everything.

There was a sizable inheritance that should have fallen to Betty two years before. She and Bobby had twice postponed their wedding date in an effort to please this imperious old guardian of the cash.

However, Betty had finally discovered that said cash was nowhere in sight. It was gone—invested by her stepmother in a get-rich-quick land deal.

"What land?" I asked.

"Some *Martian territory* beyond the spaceport of Marshington."

"H-m-m. That might turn out to be an okay investment," I suggested. "The government is pouring a heap of funds through space that ought to land somewhere."

Bobby shrugged. "We didn't care about the money. We wanted to get married."

"If you couldn't please the old dame anyway," I said, "why didn't you go ahead and marry secretly?"

"Confidentially," said Betty, "we were going to. We intended to make this Mars trip an elopement. But she got onto our plans—"

"And she came along to keep us apart," Bobby groaned.

"In short," said Betty, "she's ruining our lives. I don't wish her any bad luck, but *if* there is a professional murderer on board—"

"Betty!" Bobby's gesture stopped her before she could say it. "I know

you don't mean it, but if anyone heard you breathe such a thing and then it happened—*whoowie!*—where would we be?"

"I take it all back," said Betty, "but I wish she'd buy a one-way ticket to Jupiter."

ABOUT thirty-six hours before we were to land on Mars, the eager captain decided he wouldn't hold off the execution of the criminal stowaway. It was our show, he said, and he wasn't going to see it subordinated to any hotel dedications. The man would be executed here and now.

His stewards roped off a section of the observation deck and fastened several thicknesses of sheet steel to the wall.

This served as a background for bullets. Five guards spent an hour at drill, marching an imaginary prisoner to the wall and shooting him down.

The affair was scheduled for "noon" just twenty-four hours later. Sleeping hours went unobserved. The passengers crowded to bars, drinking and laughing with such excitement that even the sanest of souls were caught off balance.

No person could have maintained any greater calmness than Patchy Black. He was ready to wait on me whenever I came in. His hand was steady. Yet he was fully aware of what was going on.

"I've kept an ear to the door," he said quietly. "There are guards walking back and forth through the length of this corridor. They're closing in on me gradually."

"I can't understand that damned captain," I said. "Every time he comes in and talks about the murder, I figure he's going to pull a gun and say, 'All right, Patchy, off with that false nose!'"

"He scarcely even looks at me," said Patchy.

"No wonder—after giving you that line about protecting me—then discovering—or *has* he discovered?"

"He's closing in on me," said Patchy. "*Listen!*"

We could hear the slow swishing footsteps of the guard passing through the corridor. I opened the door and looked out.

"Good afternoon, Senator," the guard said, looking back over his uniformed shoulder. "Better keep your door locked. The captain says this hallway is a danger spot."

"Do you know exactly where the man's hiding?"

"Confidentially," said the guard, "the captain's orders were to watch everything. In a few hours we'll smoke him out."

Where the guards worked the curious crowds followed. Patchy and I drank black coffee back in the breakfast nook where we couldn't hear them.

"Why don't you call the captain and tell him you're onto me?" Patchy asked. "Get yourself in the clear."

"Well—" I considered the matter.

"If he ever finds out you've known all along—"

"I wish I *didn't* know."

Indecision held me in its grasp through those awful hours. I could imagine what a big moment it would be for Captain MacMurray when he jerked the false nose and mustache off Patchy and turned to me. I would be *expected* to jump up and bark, "*That's him! That's the murderer!*"

A knock sounded, the solid rap of authority. I followed Patchy to the door. It was the captain.

"All right, Senator."

"All right what?"

"The time has come. I'm ready for your identification of the criminal."

CHAPTER VIII

Martian Defiance

I TURNED to look at Patchy Black.

He was as pale as chalk. He stepped back, plunging his hand into his hand into his coat pocket. I held my breath.

"Our prisoner," the captain said, not noticing, "is in *suite 77*. The Martians are *hiding him*—"

"The *Martians*!" I echoed.

"Don't ask me why," said the captain. "We'll cross that bridge when we come to it. But this we know. A lot of extra food goes into that suite every day. They must be feeding a hungry stowaway. When I checked back I found that Vedo brought some mysterious baggage aboard that she wouldn't allow anyone to tamper with. So—"

"I—I can't believe it."

"We're all set to raid the suite," said the captain. "Come along."

My valet spoke in a husky voice. "Shall I come too?"

"That won't be necessary," said the captain. "We have plenty of guards."

Then Patchy Black murmured, "Thanks," and made for a chair as if ready to faint. I drew the door closed and followed the captain down the corridor.

Three guards with pistols ready fell in behind the captain. At the door of suite 77 we halted.

Vedo answered the knock.

"You're the one I want to see," said the captain. "We want your stowaway. Tell him to come out or we'll come in after him."

Vedo's butterfly eyelids fluttered like a bird's wings.

"What man?"

"No stalling." The captain's patience was on a ragged edge. "You know what I'm talking about. Bring him out!"

"I call Vorumuff," said Vedo. She ran back, jabbering like a phonograph in reverse, and for the next few minutes she was out of our sight, for we were now face to face with her husband.

Vorumuff blocked our way inside the first room. Tall and muscular, he stood with his huge fists on his hips, his eyes blazing defiance.

"Hold it, Captain," I snapped. "You're all wrong. Don't antagonize these Martians."

"Get back, Senator. I'll handle this. Now, Vorumuff, where is he?"

"We have no earth man."

"You lie! As captain of this ship I demand—"

"Stop it, captain," I yelled. It may or may not have been my constitutional right, but I grabbed his arm and whirled him around to face me. He didn't like it. He swung a fist, and in that split second I knew a skyful of stars and comets were comets my way.

But his blow never landed. *An invisible force hurled him off his feet*—him, his three guards, and me. We all went crashing against the wall like potatoes out of a chute.

Mashed potatoes, that's what we were, with a shot of lead for pepper. One of the guns went off in that invisible cyclone, and one guard got it in the hip. It took us a couple of minutes to untangle ourselves and get some of the bewildered passengers to come and cart the wounded man off to the doctor.

All the while Vorumuff stood tall and straight above us, his eyes scowling steadily. The captain wanted to blame it all on Vorumuff, but he couldn't. He simply *didn't know* what had happened.

"It is a Martian warning not to come closer to Vedo," Vorumuff stated, folding his brawny bare arms. His blue eyelashes blinked a trifle faster than

usual. The captain should have taken warning.

"Out of our way, Martian! *Straight ahead, guards!*"

THE guards, five of them now, with pistols ready for trouble, marched a few obedient steps, when catastrophe struck in two directions. The Martian thrust his arms out to bar their way—mind you, he didn't strike or seize anyone, but simply *hindered* them.

Two of them struck at his arm with their pistols; two others started shooting. Catastrophe number one: *Vorumuff fell forward, shot through.*

As he fell, twisting and writhing with fury suddenly unleashed, he struck the captain and knocked him against the wall fifteen feet to my left. It must have been a powerful blow, for in that same instant *catastrophe number two* came on the rest of us, and we all went *crashing* toward the right wall.

But this time we crashed much harder, and two of the guards failed to stop at the wall. They struck near the corner, spun around it and out of sight. Then I could hear part of our thudding and tumbling echo along the corridor from the farther end of the suite.

"The *riküt!*" I groaned. "It's *drawing* us."

No one heard me amid all the clatter. No one would have known what I meant. The danger couldn't be seen by anyone who hadn't turned the corner.

And it couldn't be controlled by anyone except Vedo.

Did *she* cause the rikit to cease its awful magnetic action upon us? How could she? Vorumuff was her only thought now.

Vorumuff lay dying.

The dazed captain, with swollen eye and bleeding face, gathered himself up

to see what the score was. He rose, he stared, he muttered ugly words.

He saw Vorumuff lying on the floor, his huge bare chest punctured with bullet holes. Vorumuff's wide blue eyelids gave a final flutter and became stilled.

"The Martian's *dead*," the captain said through his clenched teeth. Then he called, "Guards! Guards! Where are you?"

He stared at me, clinging to the study table. He stared at the three guards beside me, struggling to push themselves away from the wall through which the weird magnetism was acting.

Finally he saw Vedo standing statue-like above him, a pathetic defiance in her attitude.

She was gazing down at her fallen mate. Her eyelids moved slowly, her lips mumbled some strange incantation that must have helped her to endure what she saw.

Then the invisible force caught Captain MacMurray and flung him toward its vortex.

I heard several passengers screech their astonishment. A score or more were thronging into the suite.

"Stand *back*," I cried, "or you'll *all* get it!"

The captain struck his knees on the door frame and was whirling like a top when he disappeared into the room beyond. The *riküt's* room!

Terrified human outcries sounded from that direction. And could that other sound be the *crunching of huge teeth*? My blood froze.

Suddenly Vedo broke out of her seemingly petrified state to utter a sharp command at the beast we couldn't see. We were all scared sick.

Immediately the force *ceased* to act upon me. I arose. I turned to the crowd in the corridor doorway. There

was Bobby. I needed him.

"Bobby Bell," I said, "do you have a strong stomach? Go with me. . . . No, you stay out, Betty. I'm afraid there's a gruesome sight waiting."

CHAPTER IX

Vedo Under Guard

PATCHY BLACK, alias Fred, opened the door for me when I returned to 25.

"Good grief, man, you look like a wrecked freight ship," he said. "You and the captain must have dropped your man-hunt and gone after tigers."

"Truer than you think, Patchy," I said. "Get me a drink and I'll tell you all about it."

"I heard shooting. Don't tell me they picked up another murder trail on board."

"They went on a rampage the captain's going to regret—if he lives—which I doubt. He's lost a shoulder and arm, and his throat is ripped up with teeth marks—teeth the size of bananas."

I gave Patchy the full account, then, of the mysterious but highly potent action of Vedo's pet rikit, able to reach out with its invisible drawing power and gather in Vedo's potential enemies.

I told, then, of Vorumuff's defiance and the quick, inexcusable tragedy that befell him. "They shot him!"

Fred stiffened. "Go on."

"Then the rikit exerted its force out through the walls a second time," I said, "to catch those that were near enough. Two guards sailed into its reach. One escaped its clutches. The other—"

"Dead?"

"His whole head was bitten off. A single stroke of the jaws, apparently. That beast is a regular power house . . .

So there you have it. Two men wounded, one by gunfire, the other by dragon teeth. One Martian and one earth man killed—and again, one by bullets, the other by teeth."

"It would seem," said Patchy, "that the rikit proved itself as destructive as our firearms. Did they kill it?"

I laughed cynically. "Hardly. The guards were only too glad to get out of its reach. That *rikkit-pull* is death, I tell you."

Whatever might be said of Patchy Fred as a law-breaker and a man of violence, he did possess a conscience and a capacity for remorse. All this terrifying news weighed down upon him.

"In a way, I'm responsible," he said.

"Nothing of the sort."

"If I could have walked in and given myself up it wouldn't have happened. But dammit, Senator, I couldn't. I want to live to see some good come of that job I did. But now—"

"Yes, I know. We're in a helluva hole without Vorumuff. He was America's best Martian friend."

"And poor Vedo," said Patchy.

He was to say that many times in the awful hours that followed, although he hardly knew Vedo. It was a conscientious murderer's horror, to know his own promised fate had befallen an innocent man.

I tried to reason his remorse away. Why had the captain blundered so? What was back of his insistence that the Martians were guilty of harboring the stowaway? Nothing less than his own subterranean hatred of the Martians.

"I tried to turn him back, Patchy," I said, "but he plunged ahead like a goat."

THE phone rang. It was Bobby Bell calling from the Martian suite. He

and Betty, who had been friendly with Vedo in the past, were now standing by her in her grief.

"Have you heard," said Bobby, "that Captain MacMurray is dead?"

"I didn't see how he could live."

"They just telephoned us from his quarters," said Bobby. "This Martian suite is to be kept under guard."

"From the outside or the inside?"

"Both. Whoever has taken over the running of the ship intends to make Vedo stand trial for the works of her rikit."

"Ye gods! What a pretty kettle of fish—just when we're trying to build up Martian good will."

"But Vedo has her own ideas about that. She has the rikit on the alert for any intruders. So if you come over be sure to call beforehand."

"I'll go to the captain's quarters at once," I said, "and prevail upon the mate to call off this ugly business. See you later."

"One thing more," said Bobby. "The guards tell me the mate is *out*."

"Out?"

"A fellow named Menniker has seized the reins."

"Menniker?"

"You know—that big stock broker. Don't ask me how he got in. All I know is, the guards said his orders were law."

"Well, I'll be damned."

I strode up the steps and across the observation deck toward the captain's quarters in the fore of the ship. I passed the steel wall where the guards had practiced for the execution.

Passengers standing in small groups ceased their whispered conversations to turn and look at me. Someone said, "Senator, are you going to let them get away with this?" A paralysis had descended upon the ship. One could read it in the shocked and bewildered faces

—faces that betrayed helplessness. How had this shift of authority come so swiftly?

Who was this big man Menniker that had taken over the instant the captain fell—only twelve hours before we were due to land on Mars

All I remembered of the man was that he had been the most incessant talker among the groups that had gathered around the Mars map in the observation deck.

He had practically owned that map from the first day out. It was a large, highly colored wall map that showed the seven separate mountainous valleys stemming from the narrow plains of the Marshington port. Any passengers or members of the crew who had paused to catch their Martian bearings from this seven-pointed design might have fallen into more or less confidential talk with Nathaniel Menniker.

I had talked with him once or twice, and he had sounded out my interest in buying Martian lands and other stocks. For a senator such investments were out of the question, naturally. I had forgotten him.

Now it became apparent that Nathaniel Menniker had been quietly plotting some sort of mischief from our first day out. The captain's death found him ready to seize all the trumps.

I spent a few minutes in the reception room of the late captain's quarters to pay my respects to the dead. Then elbowing out of the crowd I sauntered back to the captain's private office.

Two uniformed guards stopped me, gleaming with evil triumph, and demanded to know what I wanted.

"You know who I am?" I snapped.

"On the earth you're a senator," said one of the guards, giving his companion a slight nudge, "but *here* you're just another *hitch-hiker* on a private boat."

I didn't argue the point. I simply

asked them to convey my compliments to the new captain, and turned to go. But the door opened and Menniker poked his head out.

"You might just as well come in and get lined up," he barked. "Meet the new owner of this space hopper."

I returned his ugly glare, hesitated, then walked in. He made an expansive gesture toward the elderly lady sitting at the captain's desk—none other than Sarah Windblow Weeks.

CHAPTER X

New Execution for Old

"I NEED you, Senator Pollard," Sarah Weeks said. She gave me a sharp gesture to sit down, which I chose to ignore. "This is your chance to get in on the right side."

"What's the other side like?" I asked sarcastically.

She gave me a mean squint. "That's the trouble with you headstrong senators. You don't see it's to your advantage to work in the harness. Don't you see there's big money in Mars? If we're smart we can clean up."

"I understand you perfectly. You expect the land around the spaceport to skyrocket from dollars to millions of dollars."

"It will," said Sarah Weeks, smacking the table with her plump fist.

"It won't," I said.

Then we went round and round, and the new captain—if such Menniker could be called—leaped into the argument with enough statistics on land, minerals, prices, and population to make any senator dizzy.

But I clung stubbornly to one fact. "The land you're speculating in won't be worth a cent for a hundred years—if ever. In these times transportation lines don't bother to cut moun-

tains away. They simply jump over."

"Most people that come to Mars never think of that," Sarah Weeks said with a sly smile. "That's why they're ripe for picking."

"In fact," said Nat Menniker, "we've already sold thousands of acres of those mountains to the passengers on the Blue Palace."

"The fools."

"They're happy about it."

"Wait till they see what they've bought."

"They've paid cash. They can go to work and remove their own mountains if they want their land leveled down."

I couldn't understand how he hoped to get away with such skulduggery. Oh, he had used a smooth line, all right, so smooth that the very mountain peaks charted on the maps had melted into rolling hills before the eyes of the suckers.

"You're cutting your own throats," I said. "What you're selling not even an eagle would take for a gift."

"Facts talk," said Menniker. "And the fact is, such regions have already been populated *somehow*—heaven knows how—by the native Martians."

"Cliff dwellers, no doubt." I shrugged. There wasn't any use for me to try to argue away a swindler's bagful of dishonest dough! And Menniker knew he had me squirming. He patted me on the shoulder.

"Everything's fine, senator," he said with an evil wink. "The government is pouring millions into our development, we're getting rich off the land, and the people are the suckers. The only trouble is, *these damned space-freight crashes*."

I STUDIED his expression, not knowing how to take him. Was he really griping about those crashes? He piled

it on thick, then, seeing that I was plenty disturbed about them myself, and began to prod me for more government aid to get them under control.

"Now," said Sarah Weeks, "you're beginning to see your opportunity to be of service."

"There's something back of all those crashes," I growled savagely. "I have a hunch, Nat Menniker, that you know more than you'll tell."

For the first time, Sarah Weeks shot a suspicious glance at *him*. He snarled, and Sarah quickly changed the subject.

"There's something I want you to do just now, Senator," and she motioned me to follow her, "It's about Betty. Come, I'll tell you."

On the observation deck we stopped at one of the circular ten-foot windows. The white light poured in from the moon-like sphere of Mars, now grown so large that it covered a third of the sky. A few more hours—

"I want my stepdaughter to come away from that dreadful Martian woman, Senator. I've telephoned her but she won't come out."

"So?"

"I want you to go in after her and Bobby. My bones are too brittle to take a chance."

"So I should take the chance—when you know there's a *senator-killer* on the premises!" I was dodging. "But I might exchange a favor. Suppose you inform your passengers all executions are *off*?"

"Two executions are *on*, but quick. That's why I want Betty and Bobby in the clear. . . . Don't stare at me so, Senator."

"Two—but quick?"

"For the first one, we're going to shoot that deadly flesh-chopping animal. For the second, *Vedo*."

"*Vedo*?" I caught my breath.

"She let her trained beast *kill* the

captain and a guard, didn't she? All right, she's got it coming—*where are you going, Senator?*"

I called back over my shoulder as I streaked away. "Call me Paul Revere. I'm off to warn the natives."

"If you dare warn *Vedo*—"

The old lady's warning scream caused a door to swing open. There was Vedo, looking half afraid and half defiant. She came out, escorted by Bob and Betty, and walked straight over to Sarah Windblow Weeks.

CHAPTER XI

A Dictator Takes Over

"WELL, well, speak of the devil and she walks right into your trap!" Sarah Weeks boomed out with nervous laughter calculated to attract a crowd.

Most of the onlookers saw nothing to laugh about. Poor Vedo. Her blue-lidded eyes were swollen from weeping. How beautiful she was! In her broken words she spoke. What modest, apologetic words!

"I wish to say . . . sorry for trouble . . . sorry my man be shot . . . He love . . . he love earth men. He not understand. He try to protect me . . . get in way"

She went over these words, speaking in a low, musical chant with hardly any facial expression.

Again, "I sorry rikit take such bites. . . . I forgot. . . . Think only of Voru-muff. . . . Then too late."

It was a homely speech, but nothing could have been said to affect us more deeply. Sarah Weeks would have to be pretty brutal to go ahead with an execution in the fact of this. She gave a low, retreating snarl.

"Sorry, are you! You'll not get off with that, you bird-brained—"

Vedo wasn't hearing her. "Now I go back where you call Mars. Go back, alone. Tell people about Voru-muff. Tell them some earth men sorry too. . . . Thank you for let me talk."

She had us in the palm of her hand with those words. She turned and started toward her room. Sarah Weeks moved swiftly to block her path. I thought, here was a scene I would never forget—two women of great power about to clash. One was the super-civilized American who might have a great destiny before her on a new planet—if her rashness were not her downfall. The other an illiterate Martian, a barbarian, yet a proud champion of Martian secrets that none of us understood. She too might have her day with destiny if Sarah Weeks allowed her to live.

Sarah Weeks might have weakened in her resolve if Menniker hadn't entered at that moment. He stalked in, and I think he was holding a pistol in his coat pocket. At the sight of him, Sarah Weeks got tough with her Martian victim.

"Come back here, you damned bird-brained Martian. Come *here!*"

Of all things, Sarah was forcing her toward the steel backstop.

"There, you stand there. This ship is mine now, and I'm going to see that it's safe for human beings."

I bounced up to them like a cop jumping to his own rescue. "What about a trial for her? She's entitled to that, at least."

"Get back, Pollard," Sarah bellowed at me. "You may be a senator at home, but you're just another nobody on my ship."

"You'll give her a trial, or by God you'll have this ship mobbing you," I snarled. Anyone was crazy to think she could high pressure this deal through against the weight of public

opinion. The crowd was already surging in, following my lead, demanding that Vedo be released. "Get her away from that wall," they were saying. "Don't you touch her!"

It flashed to me in that moment that Sarah Weeks and Menniker must have had a lot more reason for getting rid of Vedo than the rest of us knew anything about. They weren't going to be subtle about it, either. They had thought that the rikit's indiscreet head-snapping would give them the moral justification to stand this Martian woman up against the wall and shoot her down. They were wrong. The crowd wasn't going to have it. I had a gun in my pocket and I would use it—

"Guards, take your stand!" came Sarah Weeks' order.

It all happened in a twinkling. The rest of us were being forced back against the windows. Vedo was standing alone in front of the sheet of steel. The guards formed a line. They brought their guns up—

WHAT a weird moment! The baleful glow of the planet Mars was on all of us, and we were white like chalk. The mountains must be rising up fast now, though no one looked out to see. But the changing light, after days of artificial light, somehow added to the hypnotic effect of this awful scene.

Vedo was speaking.

"I have great armies on the Seventh Point. . . . Will someone tell them how I die?"

She was slipping a ring from her finger. It flashed green through the whiteness of the light in the room. With a flip of her hand she flung it toward those of us who were crowding the wall.

"I've got it," I called out, leaping.

The guards looked. The ring was spinning through the air, glittering, and

everyone turned. From the corner of my eye I saw Vedo reach to her breast for a weapon. I missed the ring, or rather, I struck it to the floor, to play for time. A split second was worth more to Vedo than all the jewels in the ship. The scramble held everyone's attention. Then Vedo was shooting.

Crack-crack-crack!

Two guards staggered forward. Sarah Windblow Weeks uttered a maniacal shriek, weaving around as if her throat had been cut. She turned her face toward us as she fell, and I saw that Vedo had grazed her forehead with the bullet. A sudden line of blood—

All at once the place was a blaze of pistol fire. Menniker was running up, aiming a pistol at Vedo. He'd have got her if I hadn't aimed true.

Crack. That did it. Something less than a fatal shot, but effective. It ripped Manniker's wrist. His gun hung in a limp hand under a gush of blood. His eyes rolled at me, and I could read the curse on his stony lips. He weaved and tried to keep from falling.

And that was when we all began to fall—*rikitward!*

I didn't see the rikit. It was somewhere beyond the corridor wall. But I felt its deadly power. The pandemonium spared no one. It must have reached to the pilots in the control room. It took all of us. I saw Menniker toppling.

He turned a sort of cartwheel as he struggled desperately to cling to his gun and stop the spurts of blood from his wrist. He was shooting again, and had some notion that he would catch me with one of the random shots. His blaze ripped into the chandelier. I saw the reflections of falling glass spin over the floor like a whirling kaleidoscope. I crashed into a table.

But something else was happening

that I didn't understand. The ship seemed to be weaving. The rikit had caught the men at the controls, I thought. And that was the only explanation I could think of as the strange movement gathered fury.

"The ship's running wild! . . . The ship's running wild! . . . The ship's running wild!"

Someone from the controls was shrieking like mad. I staggered to my feet. Down again. Up—I was spinning. No, the whole damned ship was spinning!

"It's running wild! . . . running wild!"

We were falling, turning and twisting as we fell. Outside the windows the sharp mountains were coming up and up, like the teeth of a vast trap, closing in on us, swallowing us—

Down, down, down—

Cr-r-rash!

CHAPTER XII

Rikit Land

SUCH blackness. Such painful blackness. Everything had gone away, and I was dying. We were dying by the hundreds. I knew somehow. We were dying, dying, dying. . . . If I could only have a sip of water. . . .

Somewhere there would be a stream. Let me bury these dead, and then I must find a stream. I must have a sip of water before I die. . . .

But I have already buried someone. Or did I bury myself? I must have died twenty times already. Everything is so black.

Ah, rain. A light rain, falling gently. Somewhere there must be a stream. The deep pains were pressing down on me, but the drizzle of rain was pleasant. I was not dead.

I was alive, only dazed. I was walk-

ing. Just walking. Walking lightly over Mars, ever so light on my feet, in spite of the heavy pains.

It was daylight. I wondered how long I had walked. I tied knots in my tattered clothes to keep them together. The explosion had left me in a ragged state. Burns and bruises and weakness. But no longer thirst. Somewhere I must have found a spring. My hands were caked with soil.

My feet kept moving, and as the light of morning filled the sky I saw that I was climbing among the sharp, jagged mountain peaks.

Yellow and brown mountain peaks were all around me, and misty purple clouds were sifting through the canyons. Looking around I tried to distinguish a cloud of smoke that would indicate the direction of the lost ship. I couldn't see any signs of it. I'd have to climb higher to get my bearings.

I was climbing, spiraling around a peak, making a trail over the sparkling stones underfoot.

As I tried to recall what had happened when the ship had crashed, my thoughts were very hazy. "*Here lies Patches Black*—" The words came to me over and over. "*Here lies*—" and there was a mound of these sparkling stones. Or was it a dream?

I sat down under an overhanging cliff and waited for the clouds to clear. I slept. When I awakened the mountains were gold and brass and copper under the lowering sun. I could see the trail of footsteps I had left in the loose stones, blotches of little blue shadows down the long grade. Perhaps I could follow my own trail back—back to wherever I'd come from. There must be others alive, back there *somewhere*.

Suddenly I started rolling over the stones. I was being drawn by a rikit! The stones rattled through my torn clothing like pockets full of marbles. I

clung to my billfold, the only thing of value I carried. Struggling to break out of my old trail, I tumbled into a jutting rock as big as a truck, and found hand holds. There I clung, protected against the drawing power of the rikit. It pulled at me like a vacuum, but the rock stood as a wall between me and the unseen force.

I peeked over. A young American was riding up on the back of the tawny beast. He saw me and called out, "Hi, there!" He tapped his mount on the shoulder and it released its grip on me. I slid down the jutting rock and regained my feet.

My gravity shoes helped to steady me, but I tottered as I walked out to confront the young, bronze-faced boy. A clean-cut lad of twenty dressed in rough brown American made work clothes.

"Don't be afraid. He won't bite you."

The rikit moved up toward me with what I thought was a hungry expression. I picked a sprig of berries from the base of the rock and offered them. The beast snapped at them and munched noisily while the young man looked me over.

"Where do you think you're going, friend?" he asked.

"Just walking," I said. "There was a crash somewhere down the canyon, and I was in it."

"And you thought you'd run away from it?"

"I didn't think anything. When I came out of my daze I was walking, that's all."

"You're still in a daze." He didn't say it maliciously. He was sounding me out, and I guessed that I was a disappointment to him. "There's only wilderness ahead. Wilderness and hungry rikits. You're lucky I followed you. I was looking for someone else.

Who *are* you?"

EVEN that question wasn't easy. The shock hadn't stopped pressing down on me. Instead of saying, "I *think* I'm Senator Pollard," I gave him my billfold. He turned through the identifying cards.

"Oh! This is better than I thought, your honor. Glad to know you, Senator." He handed the billfold back to me and watched my nervous fingers as I placed it in my pocket. I was conscious that my frayed, burned clothing made me look more like a comic tramp than a member of the United States Senate. But this lad was not only respectful, he was kindly. He introduced himself as Bill—"Bill Rambler, they call me. How long has it been since you've eaten, Senator?"

More questions I couldn't answer!

He touched the rikit in the ribs and I rolled up onto the beast's back effortlessly. We started down over the trail at an easy gait. When the way grew steep I caught onto Bill Rambler's belt, and this caused him to glance back with a smile.

"You needn't be afraid of slipping off. Tan-Jack will hold you on."

Tan-Jack gave a proud toss of his savage looking head to hear his name mentioned. He was a clean smelling creature. His slick tawny coat was strangely fragrant, like a slick furniture display room. Yes, curious but true, the old boy smelled like furniture polish. I was fascinated by the action of his rubbery suction cups that lined the undersides of his legs and his belly. He was a climber, built for the canyons of Mars. When he descended over a vertical wall of rock I thought, Oh-ho, here's where we take a header! But those suction cups snapped onto the surfaces like glue, and we stuck like glue, and down we went, swift and sure

and safe.

Then we leveled off and went trotting at a good pace—bumpety bump—right hip, left hip—

Tan-Jack cast an ugly look over his shoulder.

"He's hungry for a bite of Senator," I suggested.

"You worry him because you won't relax, that's all. He can read your mood."

"How?"

"The same as people do, only he's more sensitive. You don't know much about rikit-land do you?"

I confessed that I had never heard of rikits until Vedo and Vorumuff had introduced me to theirs. Bill Rambler wasn't surprised. The native Martians who had dwelt for countless centuries in these virtually impenetrable canyons rarely showed their secrets to the outside world. They and their rikits had come down through the ages together, he said.

"You know this country," I observed. "You must have lived here for some time."

No, Bill Rambler said, he hadn't seen much of it. He was stationed at one of the American signal towers, and that was where he was taking me now. He said, with a tinge of irony, that he was a third-class worker there.

"As a senator, I think you'll want to see what goes on at the tower. Menniker's *Empire*, if you please. That's confidential. The fact is, I was looking for Menniker when I followed your trail. The tower sent me out to make sure he wasn't on the Blue Palace when it crashed. I soon learned that he was. He may have been killed with several hundred others. The wreck was scattered over three miles of canyon. Or he may be straying around."

The suggestion stirred a certain tension within me. If Menniker had been

killed, life would be much simpler for me. If not, it might take on some new and bitter complications.

"How many were killed?"

"About half of the thousand aboard."

"What about the Martian woman, Vedo?"

"She's down there handling the rescue work, with native help."

"Thank the gods!" I mumbled. When I thought how near she had come to a violent death on board the Blue Palace, ice froze in my spine. (And the rikit knew it and gave me a backward look, seeming to say, *relax, will you?* You couldn't even think your own private thoughts around that sensitive denizen of Mars.)

"What about the musical couple, Bobby and Betty Bell. Do you know whether they lived through?"

"Yes. They were caring for an old lady late last night."

"Oh—um. Was she—er—dying?" I must have said it with the wrong expression, for both Bill and the rikit gave me a look.

"She was in excellent energy," Bill lifted a sly eyebrow, "and I'll have to hand it to that old woman, she sure knows how to cuss. Come to think about it, she was giving a certain Senator Pollard the devil, along with Vedo and a few others."

I WASN'T surprised. The talk returned to the subject of Menniker. Bill was on edge, not knowing whether Menniker would be found alive. If he was, Bill said, there'd be plenty of hell to pay for this crash. Menniker might have tolerated the crash of some *cargo* ships—that was all to the good. But *passenger* ships—a mistake, definitely. And a ship that Menniker himself was riding—well, that cost *someone* his neck.

This talk was bewildering, and even

the rikit was showing signs of nervousness.

"How do you control this damned four-legged go-buggy?"

"Tan-Jack is easier than most. He's a piece of luck from a Martian friend. There's an art to handling them—"

"Martian friends, or rikits?"

Bill Rambler smiled. "Well, both, for that matter. I guess you already know something about dealing with Vedo. Vorumuff was Americanized so he was easier to understand. But these rikits—well, you just have to learn."

The signal tower came into view, rising from an elevation that had grown out of the unfolding curves of mountain walls. I was glad to know I could get a view of the wreck from here—later.

"Here we come, Senator Pollard. Be on your toes when we ride into the presence of the officers here. I may have to plaster up a few facts to get you *in*."

"I don't know what I'm getting into."

"I know something about your Washington record, Senator." There was a steady light in Bill's blue eyes that held no sham. He and I were coming to an unspoken understanding. It was as if we had known each other before. There was something familiar about him. "I know you want to see the inside of this set-up, and this is your chance. I'll do the talking on the start."

"Sure, it's all yours."

"No, you be ready to play the role I give you. They won't know you, even if you are prominent in Washington. The technicians will play into your hands fast. We'll be all right *if* Menniker doesn't show up. I'll tell them he wasn't aboard. That will give us a chance—the chance I've been living for."

There were eight or ten other work-

ers at work on the grounds inside the high-voltage fence that surrounded the base of the tower. Probably third-class or fourth-class, I decided. They showed the proper curiosity at my approach. They had been wondering whether it would be Menniker, and when they saw it was a stranger I knew they were whispering the good news. At least it wasn't the big boss.

At the arched gateway we slid off the back of Tan-Jack. Bill gave him a pat, and the happy beast bounded off for some pasture or feed bin.

Passing under the arched sign that warned, in Martian as well as American, of DANGER, HIGH VOLTAGE, NO TRESPASSING, we strode to the square-cut entrance of the concrete building at the base of the tower.

Someone met us there who had evidently seen us coming, for he had a pair of blue trousers and a short blue coat ready for me to put on.

Bill said, "Report to Jattleworth that Menniker wasn't aboard."

"Jattleworth is waiting, Bill. Does your guest wish to wash and refresh himself first? This way, please."

ELEGANT service, to say the least. After a quick bath, some liniment, and a change of clothes I felt like a new man. The attendants—also third-class workers—apologized for not having tailoring service at my beck and call. For the present, if I didn't mind, I could wear these garments of the first-class worker. They would at least be comfortable. Later I would be fixed up in style.

Again I sensed that these workers were relieved to know I was not Menniker, whoever I might be. The crash of that passenger ship had been an awful blunder on someone's part, and the whole camp was shaking in its boots.

Had Menniker been aboard? That

was the question they all asked Bill. He *lied* to them right down the line, and I trembled with each lie. Bill was getting in deep. As a third-class worker, he was apparently trusted, and was given special responsibilities because he had adopted a rikit to ride.

Menniker would soon hear of this crash, they knew. Then any or all of them would be called on the carpet.

I buckled the metallic gravity shoes and turned to Bill, who had been waiting for me. "All right, Rambler, what next?"

"Jattleworth is waiting. I haven't reported to him yet. If we can get past him, you're in. Then you can see everything for yourself. Watch everything. We may have to work fast."

We walked into a chromium-plated office on the fourth level. The power mechanisms vibrated with a barely audible hum from somewhere down in the basement rooms. Up here it was quiet, cool; the view was almost startling—a world of gold and copper and brass mountain peaks ablaze with the last rays of sunset. The silhouette of a husky, thick-necked man crossed the window and turned toward us. He switched on a light. He motioned to Bill to come on in.

We passed a row of switchboards and half a roomful of electrical apparatus crackling with bold purple electric arcs. The "Danger—High Voltage" sign was superfluous, as far as I was concerned. I didn't feel comfortable with six-foot sparks jumping past me.

I felt less comfortable as I met Jattleworth, eye to eye. His black mustache and curly hair fairly bristled as he looked me over. I judged he had reason to be suspicious of every stranger. I remembered Bill's warning—he would do the talking on the start. If we could get by Jattleworth—

"I didn't find Menniker, Mr. Jattle-

worth," Bill was saying. "They tell me he wasn't aboard, fortunately. However, here's a senator from the capitol at Washington."

Jattleworth's features tightened. "Senators aren't welcome here. *You* know that."

"But this," Bill lied boldly, "is Senator McCune, the one you've always wanted to meet."

"McCune!" The glowering man's features relaxed into something eager, if not actually friendly. "Senator McCune!" He thrust his hand toward me.

McCune! McCune had been murdered—and I almost said so before I thought. So I was to be McCune! Well, I *would* see the inside!

CHAPTER XIII

The Invisible Hand

NIGHT and day were all the same to Jattleworth when he had a distinguished visitor like "Senator McCune." There were many things in the power plant that I must see at once. Later we would have dinner in his office.

"Don't you run out on us, Bill. I want to watch you. You've been running around a lot," Jattleworth said sharply. "You and your borrowed rikit."

The three of us took in the wonders of the vast basement hall of turbines and generators and other equipment that was strange to me. My host gloried in his oratory. Moreover, I saw that he was taking special pains to forestall any complaints I might offer.

"*You* have a stake in all this, Senator," he would repeat from time to time. "We want *you* to know we're doing the very best job that can be done. Of course there's always the human factor. There will be slips. And these more complicated mechanisms that

reach up to magnetize the ships—their controls are imperfect. We must make up our minds to it, there will be—er—"

"Unplanned crashes?"

"Well, yes—to use a very blunt phrase." He gave me a sidewise glance. "Unplanned crashes."

He went into some elaborate explanations. I breathed in the smells of oil and concrete and the dank odors of deeper mines that furnished the raw materials and fuel for this unusual power plant. When he led the way down a narrow stairs into other parts of the establishment, Bill and I had just a moment to exchange a few words in private.

"You and I are on the spot," I said. "Didn't you know about McCune? I *can't* be McCune."

"Why not?"

"Because he was murdered."

"Ugh. Tell me more later."

Here were the roots of the towering electromagnets that did the trick. The radar controls were located on the fourth floor in connection with Jattleworth's office, and from that point the deadly deeds were executed. But I must admit that it gave me a feeling of awe to look upon a few million windings of wire that had a part in sending *an invisible hand into the sky to pull down spaceships*.

"A mere flick of the switch on fourth floor, I presume," I commented.

"Nothing so simple as that," said Jattleworth, annoyed by my feeble efforts to understand. "To do the job right demands a higher grade of talent than playing the most difficult musical instrument. No two operations are the same. *You* know we've had our share of disasters. There's no point in hiding it. To try to bring down the ships the way we *want* to bring them down calls for practice, practice, practice. There'll be a long experimental period before

we can draw them down perfectly—crash them lightly and save all the cargo. But we'll do it. You and Romanoff and Menniker must have faith. We're gaining."

I was still stuck on his words, *save the cargo*. What did they expect would happen to the *pilots and crew*?

I DIDN'T ask, outright, because Senator McCune would know already. But I got my answer indirectly. They meant to crash the ships in order to get the cargo. If pilots and crew were killed that was quite all right. If they lived, they would be given a chance to join the Menniker Empire.

"If they join up and cooperate, like Bill Ramble and several of the other third-class workers, we'll give them a share in the Empire," Jattleworth said, aside to me. "That was *your* idea, Senator McCune, and it's working."

I nodded, trying to look proud over being the author of such a plan. If Jattleworth had known how *well* it was working in the case of Bill—but I didn't dare think of that.

"If they don't join up and cooperate?" I asked.

"If they don't, there's no harm done. They're allowed to stray away and try to find their way to the Marshington Spaceport. But they never get there."

"You mean—"

"Rikits."

"Oh."

"*You* knew that, didn't you, Senator? Hasn't Menniker been passing the reports on to you? We've disposed of several crew pick-ups—some of them crippled beyond recovery. We don't know definitely that the rikits got them. Some of the native Martians might have taken them in. But that's all right. *They'll* never come back to make us any trouble."

Jattleworth studied me for further reactions. I felt that I didn't dare say much more. I was on thin ice. My conversation had revealed rather too little familiarity with things I was supposed to have known.

Fortunately for me, Jattleworth was called to his office just then for some special business. He stepped onto the elevator and left Bill Rambler and me waiting in the sub-basement.

"That murder of McCune," Bill said. He was perspiring, waiting for a chance to hear more. "How did it happen?"

"A mad engineer stormed in on seven of us, sitting in a committee, and shot McCune and Romanoff down in cold blood."

"A mad engineer?"

"He must have known about McCune's part in this Menniker set-up. You see, he'd lost a son in one of these crashes—"

I broke off, startled out of my voice by the way Bill was looking at me. Then I continued, and my feeling for Patchy Black was in my voice.

"He'd lost a son. He himself was a spaceship mechanic. They called him Patches Black. He happened to be a fellow I'd known years ago in school. Swell guy, too. But this thing got under his skin, and he used bad judgment."

"So Romanoff and McCune were murdered by—"

"By Patchy. I was there. I was one of the seven. *You* must have known Patchy. Weren't you a pilot? What's the matter? You're white as a sheet."

"I knew Patches Black," was all Bill said. His blue eyes were half closed and I knew he was not seeing me or the generators, or the walls of the sub-basement, but something else far away—that I might never know

anything about.

CHAPTER XIV

Unexpected Guests

I DINED with several officers. They accepted me as McCune and they talked freely. They flattered me. McCune would have been proud, for they had a high regard for his talent for treachery.

They were tense, on their guard, trying to hold me off. They expected me to open up at any moment and give them a verbal lashing for pulling down the Blue Palace. But Jattleworth had got by me (he thought) and his confidence helped to put them at their ease.

Three sharp phone calls cut into our dinner. Something was happening in one of the storage houses. The troubled party on the other end of the line was trying to get through to Jattleworth.

"Tell him not to bother us, we're having dinner," Jattleworth said. "*Prowling Martians?* Tell him to chase them off."

A few minutes later the second call came.

"What? Again?" Jattleworth growled when the message was relayed to him. "Ask him what the hell's the matter, are all the guards asleep? . . . What if they *are* on *rikits*—tell the fool to use guns on them. They'll scatter."

When the phone rang again Jattleworth's boots thumped across the floor and he almost tore the phone out of the wall. I began to know something about his talent for being ugly.

"By the devil, haven't you settled their hides yet? What? They're into the storerooms? *They've* got firearms? Stealing our weapons under

your very noses, eh? Why, you damned louts, you ought to be horse-whipped. You better get that deal under control before I get down there. . . . I'm coming right down!"

Jattleworth growled an order toward the table and there was a general exodus. The elevator door clanged and they went down. I stayed behind.

I went to the window. You couldn't see much through the thick darkness down there in the canyons. A few dim lights showed the outlines of the concrete structures that rambled around the summit of the tower hill. Presently I saw gunfire streaking through the blackness. Then I made out a few light figures—long shadowy oblong forms—as they galloped around the hillsides and away into the pitch blackness of the canyons below.

"Robbers on rikits!" I said to myself. I stood looking out at the jagged black land beneath the starry sky. A strange world, Mars. A visiting American like myself had little notion of the kind of life that filled these mysterious mountains. I longed for tomorrow's daylight and a view of the wrecked ship. I wondered how far it would be to Marshington Spaceport and whether Bill Rambler would dare try to take me through on his tame rikit.

The whole McCune-Romanoff-Menniker scandal started whirling in my mind every time I was left to myself for a moment. I hadn't had time to think of much of a plan. How could I take a load of convincing evidence back to Washington and blow the lid off this deal?

"The government is being played for a sucker," I said under my breath, already thinking of my report to the Senate. "These murdering thieves are sitting back gloating, selling those impossible lands, and at the same time

playing ruin on the government's effort to establish a base."

I paused, fascinated by the colored lights of the control panel across the room. I sauntered across the concrete floor, gazing in awe. Here were the switches and levers that did the dirty work. The nerve center of the invisible hand that reached into the sky. There were other towers, I knew, that played their part. I had glimpsed them on my approach to this, the headquarters.

"Do you want an ax?"

It was Bill Rambler, walking in cautiously, guessing my thoughts.

"I've had the same inspiration many times," he said. "But I've held off, for fear I'd muff the job. This whole devilish nest has got to be cleaned out."

"Between you and me," I said, "*who* brought the Blue Palace down?"

BILL lifted an eyebrow as if secretly amused, and again I caught that impression that I already knew him. His familiar mannerisms—

"Didn't Jattleworth give you any convincing explanations?" he asked.

"He said some rank amateur got overeager to demonstrate and pulled the switch without order."

"That's a laugh," said Bill. "Jat was the one who got overeager. He'd been drinking. He called an understudy in to take a lesson in downing the ships, and he began blowing to this understudy that it would take the fellow months to learn. Then the Blue Palace came in. The understudy warned him that it was a passenger ship, and Jat shut him up and threatened him and slapped him and said that he knew his own business and he'd not take any insubordination from an underling. Then he began pulling switches, and the Blue Palace came down."

I listened to Bill's inside story. The whole camp knew that Jattleworth would choose someone besides himself to place the blame upon, and everyone was scared stiff. Things had eased a little with our false news that Menniker hadn't been aboard. But they were still plenty worried about me.

"As Senator McCune, you're in a position to burn his pants off for the mistake," Bill told me. We walked back to the window. Everything had quieted out there in the blackness. The men would soon be returning. "He thinks he's getting by you easy."

"Let him think it," I said. "Until I can be sure of a quick ride out of this den of dynamite, he's got *me*, whether he knows it or not."

"We'll keep our fingers crossed."

We. Bill and I had fallen into the most natural combine in this job. Without him I'd have been as helpless as those bumbling Martians who had just tried their hand at plundering firearms. Bill must have known from the start where I stood. This was surprising, too. Earth newspapers and news bulletins didn't filter down to third-class workers here.

Mischievously I put Bill to a test. The elevator was on its way up and there wasn't much time, but I said, "How do you know I'm not in league with Menniker?"

Bill grinned as he looked back. "Yeah? How do you know I'm not in league with them myself, leading you on like a lamb to the slaughter?"

We both knew. Bill gave me a wave and hurried off. I felt confident, then. With him to protect me, I would get my dope, plenty of it, and go back to Washington and make headlines that would leap all the way across the solar system.

But just then something happened that knocked our pretty set-up sky-

high.

The elevator door opened and it wasn't the Jattleworth party returning. It was a messenger from the arched gateway, a third-class worker. He was looking for Jattleworth.

"*Menniker's* come. He's down at the gate and he wants permission to enter. Will you come down and identify him, Senator McCune, so we can admit him?"

I gulped hard. "Er—does he look like *Menniker*?"

"I wouldn't know. But he's been in the crash, all right. What's more, he's got one arm in a sling. He said some one took a shot at him on board—"

"Ugh. Did you tell him *I* was here?"

"Yes. And he said I was crazy. He said you'd been killed back in Washington. And I told him he was nuts, that you were here, and that you had said he wasn't on board. That's why I think he's a fake."

"He *is* a fake!" I snapped my fingers to punctuate my bluff. "Tell him Senator McCune refuses to see any imposters."

The bewildered messenger rang for the elevator. He turned back to give me a doubtful look. I snapped my fingers again and he drew back. But he wasn't satisfied.

"It's Jattleworth he wanted to see," he said. "I'll find Jattleworth."

The elevator door swung open and Jattleworth and his aides stepped out. They had caught the messenger's words.

"*Who* wants to see me?" Jattleworth bellowed, and he was in a savage mood.

"*Menniker* — *Menniker* and six guards."

"*Menniker!* I thought he—"

"*Menniker*," the messenger repeated. "He's waiting down at the gate, and I think he's mad."

"Ugh." Jattleworth turned pale.

"Help me, boys. We've got to stall for time."

CHAPTER XV

Cat and Mouse

SWISHING footsteps sounded from the stairs. We whirled about to face *Menniker!* He and six of his guards from the Blue Palace had crashed in and were on us before I had time to catch my breath.

I was caught. I started to edge back of someone. In my clothing of a first-class worker I might not be noticed immediately, but I was caught—almost.

"Well, Jattleworth!" *Menniker* growled, ignoring the rest of us. It wasn't what you'd call a cordial greeting. *Menniker* had an arm in a sling. He looked rugged in his explosion-blotched clothing. His tie and half of his collar were gone. He had tied his suit coat around his shoulders by the sleeves, and it swung like a cape as he swaggered toward us. An atomic pistol hung through his belt and his good hand rested on it.

The bumbling messenger crossed in front of Jattleworth and began making excuses, and that gave Jattleworth a moment to collect himself. The black-mustached boss shot a speculative eye at me, and I knew he was getting ready to pass the buck. "Well, Jattleworth!" *Menniker* repeated. You could tell it in his voice. He was all set to explode. He and his guards.

Jattleworth pointed at me.

"*You*, Senator McCune. *You* lied to me. You said *Menniker* wasn't with you on the Blue Palace."

"*That's* not Senator McCune!" *Menniker* snapped.

"Then what's the plot? What have you two made up?" For an instant the black mustached boss jumped at

impossible conclusions.

"Senator McCune's dead!" Menniker was moving into the circle slowly now, and there was no doubt that he was the master of the situation. Jattleworth's black eyebrows jumped as Menniker turned his cruel eyes on me. "Say, *who* do you think you are? Halt, you! Well, I'll be damned. Senator Pollard!"

I stood petrified, taking Menniker's cold glare. I said nothing.

"He said he was Senator McCune." This from Jattleworth. His aides were gaping at me. "He said—"

"Shut up. He's no other than my would-be *assassin*." Menniker gave me an evil "Ha!" as he gestured toward his wounded arm. I was on the opposite side of the circle from him, ten yards out of reach, "Well, this is a pretty dish. The *last* time I saw you, Pollard, you were slicing at me with an atom blaze. That's when the ship went down. And we all went down with it. And I went down vowing that if I *ever* saw you alive again, damn me if I wouldn't *rip you from ear to toenail*! Well, here's my chance. Turn about is fair play, you know, Senator Pollard. Dear Senator Pollard. This is going to be a *pleasure*. In the presence of these witnesses, I hereby perform one of the noblest acts of my life."

Mentally I had been moving backwards. But I stood, and he moved closer. He brought his gun up slowly. The cold sweat had popped out all over me.

"Hold it, Menniker," I blurted. "You'd give a lot to know what I *know* about this gang—" It was a long chance. "—what they're plotting on you—"

"I'll find out without your help," Menniker snarled. Nevertheless he made a deliberate and accusing turn toward Jattleworth, and that moment was

what saved my life. That plus Bill Rambler, who couldn't have been far off.

Off went the lights!

I ran. I kicked the elevator door on the way past. I don't know whether it fooled anyone or not. All I know was that it gave a metallic clang, and I was already making tracks in another direction. The rush of feet through the darkness was confusing enough to help. The gun that had aimed at my heart a moment before wouldn't dare flash through this chaos.

I hit the railing of the stairway and swung over. For minutes past I had been calculating—

"Get him, there, damn you!" I heard Menniker blast, and he followed his order with an oath that kept me company as I went down. Someone had flashed a beam of light toward the head of the stairs where I had just been. That helped. And there was light below.

I WASN'T falling, exactly. My arms were doing the ape-like act of catching one railing after another as I dropped, down and down. I remembered that the newspapers had once published a picture of me doing my exercises in my basement through a series of horizontal bars. The photographers should have seen me now.

The fire was flashing somewhere overhead. It never caught me. From the wild scramble that echoed down to me, they must have got one of Jattleworth's officers by mistake.

I was three levels below my starting point when the lights in the stair well came on.

"This way!" It was Bill. He had somehow got there ahead of me.

We took a side stairs for the final flight, then ducked out a side door. The air of the outdoors struck my face. I

smear the sweat out of my eyes. Things were pretty black, and I was afraid it wasn't all from the night. My head and shoulders started swinging down toward the ground.

"Wait, Bill. I'm fagged!"

"Whee-pee! Whee-pee, Tan-Jack! *Whee-pee!*"

A rikit was there in the blackness. Bill had thought of everything. The big shadowy Martian tiger-horse was prancing, standing by, waiting for orders, and the *whee-pee* was all he needed.

The rikit leaped into a gallop on first bound. I jumped for him and missed. Why didn't he *draw* me? He was off like a faintly visible comet darting through a black sky.

I fell back helplessly. There went my chance.

As the rikit raced through a path of light, past the front entrance of the tower headquarters, I saw that there was some sort of passenger on its back. It looked like a first-class worker hanging on for dear life.

It couldn't have been Bill, for he was dressed as a third-class worker. No, he was still here beside me, crouching down in the blackness at the base of the building.

Off the beast went, with his mysterious passenger clinging tight, around the curved trail. His galloping feet beat a barely audible tattoo, like a muffled drum. Just as he rounded the sharp curve to cut down into the canyon, the spotlights from the fourth floor of the tower swept over him. He and his rider showed up perfectly in that brief moment. The guns blazed at him too late. He was away.

"Oh, I get it," I whispered to Bill. "There I go."

"And they'll be right after you," said Bill. "Sit tight . . . Here, get back in the bushes. There's a little window back

here. Wait. Wait till the chase starts."

It was a perfect ruse. In a minute or two the pursuers were hot on the trail, racing out on the road in their little jeep-like cars with spotlights sweeping the mountainsides around them. The fourth-floor searchlights kept up their agitated flashing, too. Menniker *wanted* me, and he meant to have me.

I could imagine what he was saying to Jattleworth, and it wasn't pleasant. The reputation of Jattleworth and his whole tower outfit was at stake. Jattleworth would have to make good if he didn't want his reputation for efficiency to go awfully damned flat. And one way to prove his efficiency was to overtake me and bring me back. The way the guns were flashing down through the canyon, I could safely assume that they weren't particular about bringing me back alive. Anything to please Menniker.

"It was a good trick, Bill," I breathed, still smearing the perspiration from my neck. "But I'm still here, and so are you. And we've got to get out of here."

"If I could have been sure that Tan-Jack would get away, we'd have gone with him," Bill said. "Two passengers would have slowed him up quite a little—still, we *might* have made it. I wonder . . . I've never put Tan-Jack to a test like this before. I couldn't be sure."

"What'll become of him?"

"The jeeps won't touch him. By this time he's found a hiding place off the trail. He finds dozens of hiding places on any mountainside. If they come close enough to discover him, he'll *draw* them."

"That fellow that rode off was just a—"

"A dummy. I fixed it while you were having dinner. In case of emergency."

I breathed more easily.

"By daylight," Bill said, "they'll send their helicopters out to look for Tan-Jack. Then he won't have so many advantages because they won't have to confine their search to the trails. I don't know how he'll fare then. I'd hate to lose him."

IT WAS well after midnight, Mars time, when the searchers began to straggle home empty handed. There must have been some doubt among them as to whether their quarry was the genuine article. We heard echoes of a discussion from the front entrance, and it warned us that there was about to be a more thorough search made around the premises. If I *had* escaped, it seemed likely that I had had some good cooperation from the inside.

Bill and I crawled through the small basement window and made our way over the heaps of fuel barrels in the dimly lighted room.

"We'll be safer," he said, "if we can make it across to the storage rooms. They've got several warehouses full of the undamaged cargo they've collected, for which the United States government has paid the bill. You could hide out, and I could bring you anything you'd need. Unless they decided to make a room by room search you should be safe for a time."

"They'll make a thorough search as soon as they overtake Tan-Jack and find I'm a dummy," I declared. "Jattleworth's job is at stake. He's already got too much to answer for. If I slip through them, Menniker will clean house."

We crawled over barrels until we reached the aisle. Bill took off his soiled brown cloth hat, rolled it into a wad, and pocketed it. He smeared dust over his face and roughed up his hair. The two of us were thick with

dirt by now, and I knew it wouldn't be too easy for anyone to recognize whether we were third-class workers, or first-class, much less to identify us at a glance.

"You're in this pretty deep, Bill," I said. "Jattleworth will have missed you by this time."

"Yeah. He's toppled, all right. By now he's guessed I'm your key man."

He peeked out into the aisle cautiously. There might be guards waiting at any doorway. Footsteps were echoing toward us from the left. We couldn't afford to get caught here. We slipped to the floor and sprinted down the corridor, about as quiet as a pair of kangaroos, and ducked into the next accommodating shadows.

That was the beginning of the game. Cat and mouse. Two mice against a whole towerful of cats. It was nerve-racking. Back and forth. From one room to another. Through the high-stacked cases of goods in the warehouse rooms. Under tables, behind doors, into boxes, up into the rafters, behind water pipes.

The morning shifts were coming on, and we were dodging workers in a regular beehive. And all the time there were those guards from the Blue Palace—Menniker's prize guards—beating a trail back and forth through the basement rooms and storage buildings, inquiring whether they had seen any trace of us. The Menniker guards were out to show the regular tower staff that culprits weren't going to slip through *their* fingers. A simple ruse with a rikit wasn't going to sidetrack *them*. There was at least one guilty party on these premises. And maybe there was senator, too.

Approaching daylight showed through the basement windows while we were still dodging.

We heard one party of searchers

speak of Bill by name. There had been a general roll call, and Bill Rambler hadn't been present.

"It won't be long," Bill whispered. "Our luck can't last."

By the light of dawn, filtering through the dusty narrow basement window, I saw the white light of desperation in Bill's eye. It was time to take long chances. The two of us would probably never get out of here alive.

"You stay here," Bill said. "I know where I can pick up enough explosives to do some good."

I glanced toward the stairway that led to the sub-basement. I remembered this part of the establishment. We were only fifty yards from the roots of the invisible hand that reached into the sky—the millions and millions of windings of wire—the gigantic electromagnets.

"Go ahead," I said, "and I'll write that statement for you while you're gone."

We had agreed that *if* Bill should get out alive, and I failed to get out, he'd have a better chance to put his story over at Washington if he held a signed statement—my words, my signature, my appeal to a nation that was being hoodwinked.

Was I being unnecessarily fatalistic?

Bill's light footsteps faded. I took a slip of paper from my billfold and wrote, and my words fairly crackled—

I didn't finish that note. A shadow crossed the basement window, then came back. The searchers were looking for clues. They were opening the window. I darted for the exit that Bill had taken.

I got halfway across the room, running past the structures at the center of the tower's base. Someone was coming from the other direction. I thought of pretending I was a worker, checking the machinery, keeping my back

turned. I hunched over—but there was a small door!

I opened it, walked in, and found myself inside a tube-shaped enclosure. The door closed on me automatically. I was completely enclosed in a plastic cylinder, just large enough for one man.

S-s-s-s-swish!

I was going up—up—up! It was the tower elevator and I was headed for the top!

CHAPTER XVI

In the Crow's Nest

I WAS growing light-headed from the elevation when the tower bucket slowed to a stop and automatically opened.

I stepped out into the crow's nest. It was a dizzy sensation. The circular room was all windows. The ceiling and floor were as transparent as the crystal walls. You got the sensation of being delicately balanced at the top of a giant pinpoint. The whole four-hundred foot tower was below me.

The one worker who occupied this dizzy little sky nest was dressed in a first-class worker's uniform. He was sitting, half asleep, with his head propped from one elbow, and the small end of the telescope was pressing against his forehead. He didn't turn to look at me. He glanced at his watch.

"It ain't your shift for half an hour yet, Jake, or has my watch slipped?"

The only thing that had slipped was his gun. I reached for it and got it, and he turned around lazily to see what the joke was. Then he saw me and his sleepy eyes jumped. He turned slowly, scratching his left ear on the end of the telescope, and his stubbled face was a question mark.

"You need a shave, friend," I said.

"You need to wash your face, broth-

er . . . Ugh." He was gathering anger slowly. "You don't belong here. I've got an order to report things like this."

He reached for the phone. I pressed his hand gently and gestured with his pistol.

"Let's don't," I said. "Let's just sit quietly. It's a nice scene you've got up here."

"I'll bet you're the one they're lookin' for. They called up 'bout midnight."

"What are you supposed to do about it?"

"Keep watch on the rikits and call down if I see anything suspicious."

"Good," I said. "I'll take over this shift."

"You think so?" Stubble-chin glanced at the elevator. It was closing automatically. S-s-s-swish! Down the shaft!

"That's Jake," said Stubble-chin, giving me a wry smile. "He's comin' on early."

"Get in that chair," I ordered. "Turn it around . . . Now sit tight or I'll blow your head off."

I knew I was working against time. Stubble-chin didn't resist. He took it easy—so easy that I was almost unnerved. I found enough electric cord to bind his wrists and ankles. I lashed him to a beam, for a good measure. All he said was, "Wait till Jake comes."

I had just finished when the swish of the elevator sounded, and the automatic door slid open. I gripped the pistol and waited. The man who stepped out was—Bill Rambler!

"Don't shoot, Mister," he said with a wink. "I'm just a third-class worker . . . Well, well, looks like you've got the situation pretty well in hand."

Stubble-chin glared out of the corner of his eye and muttered, "More dirty faces," and that was about all we heard

out of him for the next three hours.

Temporarily, at least, we had given the Menniker forces the slip. At last we could catch our breath. At last we'd get an eyeful of the troubled, wreckage-strewn canyons of Mars. What we were about to see was beyond my wildest guess. The flaming red of dawn had changed to yellow gold, and the whole Martian world was spread, map-like, before us.

Bill locked the elevator bucket so no one below would be able to get it. Barring a catastrophe, we were safe until hunger drove us down or explosions blew us up. Bill reminded me that I shouldn't allow myself to grow too comfortable. He had planted, at the base of the tower, a small truck-load of explosives. Anything could happen.

Stubble-chin heard and became eloquent. "You damned dirty-faces!"

CHAPTER XVII

A Bird's-Eye View of Trouble

WHAT was the streak of blue on the horizon? That was my first surprise as I took in the world from the top of the tower. Bill informed me that it was a harbor. I had never seen it on any of the maps of the Marshington Spaceport Region.

"McCune's little secret," said Bill. "That's where the government *should* have planted its space base. Vedo's tribe would have granted it. But the McCune gang meant to have it for themselves. Let the government *build* and *fail* in the rocky inland. Then Menniker and McCune would be fixed to take what they wanted."

"Damned pigs!"

No, pigs wasn't the term. Pigs weren't given to such treacheries. In my mind's eye the exposure of this

scandal was already blowing the dome off the Capitol at Washington. Washington was a long way off, but if I ever got back, McCune and Romanoff could consider themselves lucky to be dead.

The sun climbed the sky, and the shadows over the canyons contracted to reveal more of what I wanted to see. Herds of wild rikits on distant mountainsides . . . Rikits and riders dotting the mountainsides within a few miles of us . . . Rikits crawling over perpendicular cliffs like snails over a garden wall . . . Rikits obeying commands, helping search the dark line of wreckage that must have been the Blue Palace. Other wrecks over the landscape—shells of broken ships.

Rikits were being used to help bury the dead. We quizzed Stubble-chin and got a few blunt answers. Ever since the crash, the Martians had been working with amazing teamwork, apparently, to rescue the living.

Through the telescope we spotted Vedo, tall and graceful, sitting sidesaddle on her mount, moving through the groups of Martian workers. When she left the scene she rode in the direction of the shadowed table-rock that was being used as an open-air hospital. It stood near a cavern opening which must have been a citadel of natives. Scores of the rescued were being cared for there, some of them walking about as if in a daze, others lying on blankets receiving treatment from Martian doctors and nurses.

I tried to spot Betty and Bobby, but at this distance it was impossible.

Around this gathering of a few hundred unfortunate earth folk, guards astride rikits kept watch. Otherwise there would have been danger that the wild, hungry rikits, who often ventured within fifty yards, would snap a few heads off. Occasionally one of them would slip through the guard, and a

huddle of people would scatter in terror.

Near at hand, almost directly below, the guards and workers from the tower were continuing their search of neighboring hills and canyons, looking for me.

The three helicopters were at work and presently one of them moved down as if to land beside an outcropping of rock.

"They're on the trail of a rikit," Bill said. "I wonder if it's Tan-Jack."

A moment later the beast that had concealed itself among those rocks jumped out and struck down upon the helicopter. Something must have crashed. Three men leaped out and began shooting. The rikit *drew* them, and they went tumbling up hill until they bumped into a rock barrier. The rikit raced off unharmed, but the men spent the next hour trying to get their helicopter off the ground, finally gave it up, and started for camp on foot.

WE COULD see the trails that led from the base of our tower across to other towers by way of canyons. If the Blue Palace had been a cargo ship, trucks would have been busy gathering in the spoils.

In another direction we could see the little town of Marshington—American's Martian hope—nestled in a cup-shaped valley.

"They're supposed to have dedicated a new building over there," I mentioned.

"They probably postponed it. They were expecting to dedicate it when the tribe from the Seventh Point marched down to renew the treaty. This wreck has delayed everything. And you never know. It may have changed the tribe's mind about renewing their favors. Sometimes I wonder . . ."

I wondered, too. Vedo was with them

now. Vedo must have told them of Vorumuff's death. She must have told them how near she came to being executed. No, it would not surprise me if the Seventh Point Martians should have a change of heart, and America's chances on this planet would be lost before Bill and I ever got back to the halls of Congress with our inside story.

If we were to get away, Marshington would have to be our starting point. Mentally I envisaged the rikit ride over that wilderness of peaks. That, Bill said, was the worst wild rikit country of all.

Bill was looking down, absorbed in something that was happening not far from the base of the tower.

"Give me that hammer," he said suddenly.

I reached for the tool box. He jerked his old cloth hat out of his pocket, sniffed at it, wrapped and tied the hammer in it. He pushed a panel of the curved window open. His arm swung three or four times, not like a baseball pitcher winding up, more like a boy weighing a stone in his hands before he tosses it into the water. He smelled the hat again, and all the time he was looking down.

"That's Tan-Jack down there," he said, breathing tensely. "Tan-Jack—and Jattleworth's hiding in that little steel cube. I saw him go in. With a gun. He's safe in there. The rikit can't draw him—or bite him. He's just waiting for Tan-Jack to show his head around that red rock. Here he comes—"

Bill tossed the weighted hat and it fell, spinning slowly. Down through four hundred feet of thin air and sunlight. For a moment I thought it was going to hit the rikit square on top of the head. No, it was falling to one side. There, it thumped the dry earth with a little puff of dust.

The rikit jerked back. He held his position back of the rock.

"He's sniffing," Bill said. "I can tell."

"What does he smell?" I asked.

"Me," said Bill.

Through the telescope I saw it. The beast turned his head upward and stood there, gazing curiously at the top of the tower.

Then the leather-jacketed figure of Jattleworth bounded out of the little cube, gun in hand, and *he* looked up.

"You've given us away, Bill," I said. "That's Jattleworth, and he knows there's funny stuff going on up here."

"There's just one elevator, and we've got it," said Bill. Then he added with a triumphant grin, "And there's just one Tan-Jack, and we've still got him, too."

"And there's just one Jattleworth—" I broke off. Three Blue Palace guards could be seen, coming out of the tower to join Jattleworth. The rikit must have turned the magnetic power on, just then, for all four of them suddenly lost their footing and went tumbling like a pack of puppies. The next thing I saw was Tan-Jack racing off into deeper shadows, while Jattleworth and his compatriots picked themselves up and took an inventory of their broken bones.

CHAPTER XVIII

A Tower Full of "Ifs"

WE FOUGHT the battle of the tower that day. If you've ever been stationed in an observation balloon while a war was gathering up around you, you'll know what I mean. Well, not quite. Your job in the balloon was most likely that of reporting everything you observed. Our job, strangely, was just the opposite. We *refrained*

from reporting.

The more we saw, the more we refrained. Before the end of this crucial day we were fairly bursting with secrets.

You might say that *waiting* was the hardest part of our tower siege. While it lasted only a day, we thought it might last enough days to starve us out. Bill and I hashed over all the possibilities a dozen times before the first day was half spent. We translated the possible starvation period from earth days to Martian days, and right away we came up against the problem of our prisoner. Should we feed him or let him starve?

This stumped us, and we began at the other end.

What we wanted first of all was to get back to Washington.

If we couldn't have that, we'd settle for a chance to tell everything to Vedo, in the hope that she might carry our word to Washington eventually.

If we couldn't tell her, we'd try to send her a message somehow.

This many *ifs* looked like a slip from victory to a gamble that might mean half a victory, or no victory at all.

If we failed to get a message through, then our big purpose of exploding this scandal for America was lost. And if we were doomed to such a defeat, it was certain that we were *personally* doomed.

That brought us to a very morbid *if*. If Menniker *had* us, if there was no escape, should we give ourselves up as prisoners and face his gunmen?

"He and Jattleworth are both renowned for their cruelty," Bill reminded me. "On board the Blue Palace he might have been satisfied to do an execution with pistols. Here it wouldn't be that simple. The least we could expect is to be tossed to the wild rikits."

We talked it over lightly, as if the

cold chills never touched our tough spines; but I was perspiring.

"It might only help a little," Bill said, "but I say that if Menniker calls our number, the least we can do is blow up this signal tower and ourselves with it."

"As a last resort, I suppose—"

"This tower equipment couldn't be replaced overnight," Bill reminded me. "It's costly. It comes from America. If Menniker were forced to go back for more, they'd get onto him."

"I want to see him behind bars," I said. "It's a poor substitute to blow ourselves to atoms, contenting ourselves that he'll get his reward later. Besides, how do we know we could explode this tower?"

"Didn't I tell you I planted some explosives—"

"A truckload, you said. Shall I take that literally?"

"It was a handtruck," Bill grinned. "I was feeling a bit heroic over the job, getting them concealed in this elevator shaft—"

"They'll have been discovered before this time."

"No," said Bill. "No, they're still right where I hung them."

"At the bottom of this elevator shaft?"

Bill shot a mischievous eye at me. "They're near the *top* of the shaft now," he said. "You see, I fastened them to the underside of the elevator bucket, just before I rode up."

I groaned. Stubble-chin muttered something about damned dirty faces. Bill said he would have told me sooner, but he didn't want to make me nervous.

I groped for other ways out. If we threw a few sticks of TNT down at the arched entrance and caused enough commotion with an explosion—or tossed a burning shirt down and start-

ed a good fire near one of the warehouses, we might draw enough attention to the *outside* that we could chance a descent on the *inside*.

"And get ourselves shot," said Bill pessimistically. "They'd see through that in a minute. Especially after we pulled that trick with Tan-Jack."

It was his theory that since Tan-Jack had reappeared this morning without the dummy tied to his back, they had evidently succeeded in shooting the thing off. Or if he had shaken it off, himself, they had found it.

"They know we're both here, Senator, and they'll smoke us out or starve us out." Bill rested his head in his hands glumly, and I thought we were in for a bad time.

His elbows suddenly slipped off the shelf and his head jerked up. "Look, Senator! *Look!*"

"*Rikits!*" I gasped, *Marching rikits!* A hundred of them! A parade!"

"You mean an *army!*"

CHAPTER XIX

On the March

THEY were marching out of the cavern headquarters—the opening in the mountainside about six miles away, not far from the table rock that had served as a hospital for the rescued.

"It's the march to Marshington." This from the grumpy prisoner with the unshaven face. His remark was calculated to dampen our enthusiasm. Neither Bill nor I had ever seen the March of the Seventh Point natives, and our first thought was, Vedo's coming over and engage Menniker in battle! We should have stuck to that thought, too. But we let Stubble-chin knock it out of us. He said, "Send the word below."

We laughed. No sale.

A little later the phone began to jangle, and we had to take it off the hook in self-defense. We could hear the voice of someone who was trying for Bill.

"This is Manley, a friend of Bill Rambler's. Answer me, up there, will you."

Bill shook his head and gestured to me to take it.

"Speak your piece," I said.

"Send that elevator down," the voice demanded. "Let Bill come down. I'll see that he don't get into a jam if he'll come right down."

I ignored the uproar. It grew worse. It threatened. They would come up after us if we didn't descend.

"We'll be down for dinner," I said, "if you'll promise to have pie and ice cream."

"Put Brandon on."

Brandon was evidently Stubble-chin.

"He's busy," I said. "In conference. He's tied up for the afternoon."

Then we could hear Jattleworth muttering. They wanted to know if anything could be seen from the tower, and they couldn't figure out any way to make this report. They would have to press one of the helicopters into observation service—but all the copters were out searching.

"The first one that gets back can have the honor of going up and bombing out that devil's nest." *Menniker's* voice.

Bill looked at me. We had forgotten the helicopters. Bill ran his hands through his hair speculatively, and I knew he was mentally preparing himself for company.

The sun was on its way down. Mid-afternoon. The rikits were marching, five abreast, about twenty-five rows of them, into the valleys and out again. They resembled some fantastic fairy-story crawling thing made of more than

a hundred separate parts, each part topped by a rider.

Bill whispered. "Do they know, down there?"

I glanced at the telephone and shook my head. As far as we could tell, the March to Marshington had not yet been discovered by the Menniker fortress. We were the observers, and we were keeping mum. And even I didn't know all—not until Bill told me. He whispered for me to watch the *sneak* approach that was swinging around us.

Then I began to see what I was sure Stubble-chin hadn't noticed, in spite of his practiced eye. The hundred and twenty-five rikits and riders in formation were a small part of the actual movement of Seventh Point Martian troops that was taking place before our eyes. It was only the conspicuous part. The rest of the rikit army—and as we later realized, by far the larger part—was slipping along under cover.

Not the cover of darkness, but the cover of mid-afternoon sunlight. From the tower elevation, rikit shadows were at a minimum. The protective coloration of the brown and yellow beasts climbing over brown and yellow rocks was a pretty efficient cover in itself. The riders, dressed in tan, crouched low. At first discovery you'd have sworn these were wild rikits without riders.

You saw them not as a group, but as individuals slipping from one hiding place to the next. At first you'd think there were only two or three—well, five or six—no, fifteen, twenty, possibly fifty—but *look!* And right away you began to find scores of them.

"They're forming a half circle," Bill whispered. "I wonder if they know the helicopters are out . . . Listen. The phone—"

We caught echoes of excited talk below, now. From the fourth level

they were observing the Marshington March. They were trying to signal the two helicopters (the third had been knocked out earlier by an encounter with an intelligent beast named Tan-Jack).

ONE of the helicopters limped home just before sundown, and almost immediately it rose from its roof landing and started up in our direction. Our window was open and it came close enough for us to hear its engine cough and sputter.

Bill aimed his atomic pistol and picked off a blade on the second shot.

Clink! Whirr!

The helicopter sailed down dizzily, but landed where it meant to land, and right away the mechanics were giving it first aid. Someone shook his fist toward the top of the tower. It gave me a weird, sinking feeling, even though the fist-shaker was four hundred feet below me.

"It won't be long now," I whispered to Bill.

"The sun's about to set," Bill said, drawing a tense breath. "I wonder whether these Martians will be good for more than one quick round of fireworks. I've never heard of these peaceful Seventh Pointers making war. They can't have filched many weapons in last night's raid on the arsenal. But there have been lots of crashes—ugh."

Bill rubbed his eyes. He was seeing something in the vicinity of the tower base directly below us. He leaned so far out the window that even Stubble-chin gulped.

"Get me another tool," Bill said. "Another hammer or a wrench."

He removed his shirt, weighted it, and threw it out the window. It landed with a little puff of dust. Then I saw Tan-Jack taking a few cautious steps out of the bushes where he had

been hiding. He sniffed at the shirt, and then *looked up*.

He slid back into the bushes. The copper sunlight highlighted the streak of his back for a few moments. I wondered if I would ever see him again. I wondered if *he* knew that a whole army of his rikit brothers and their masters were closing in.

The motor of the helicopter down there was running again. Quietly humming. I caught a glimpse of Stubble-chin's self-satisfied smile. I knew, then, that he had seen everything—the Marshington March *and* the approaching sneak army. He knew that the March was only a screen and that with nightfall it would turn from its course and come back. It was still moving away through the evening shadows, having passed within two miles of the tower, and was now about four miles down the valley from our station. Vedo herself had ridden at the head of that procession, but Stubble-chin didn't know that, for she couldn't be distinguished by the naked eye.

The helicopter was humming. Stubble-chin was contenting himself that he'd be out of his bonds within a few minutes, and what he'd have to tell would turn the Menniker camp into a war front in a twinkling. Stubble-chin would be the hero in the nick of time!

Clatter-clatter-clang!

Noises from a new direction.

We all looked around. Trouble seemed to be coming up through the plastic floor of our crow's nest.

"The cables!" Bill said. "They've hitched something to the cables in the elevator shaft. Whatever it is, it's riding up."

"Or maybe *they're* riding up."

"Could be." Bill tried to peer down through the crack at the edge of the elevator bucket. It would be a perilous climb for anyone unless he had devised

an excellent mechanical hitch. The cables were locked so they wouldn't ride, but we could hear them smacking the inner walls of the shaft.

"Boys," said Stubble-chin, "you're about to have company from two directions."

"Quiet, mascot," I said. "We're concentrating."

"If you want to get off with something easy like horse-whipping, I'd advise you to cut me loose from this pole—"

"Shut up!" Bill snarled. He was white. I knew he was regretting that he'd hung a load of death on the underside of the elevator bucket. He was debating whether to send the bucket down, so the explosion wouldn't go off right under our feet. "Damn, it's too late!"

If an explosion occurred a hundred feet away from us instead of immediately beneath our feet, it would make the same hash of us. We were caught in our own trap. But if the blast *could* be placed a fourth of the way down, it would deal hell to the invisible hand.

"I'm gonna let her drop!" Bill snapped.

He unlocked the elevator bucket. He reached toward the down button. He reached—and *fell back*.

I fell, too. At first I thought Stubble-chin had got loose and struck the feet from under us. No, the old boy was still bound in his chair, trying to watch us out of the corner of his eye. The button hadn't been touched. The open elevator bucket still stood there, waiting.

Then I knew—we had been *drawn* by a rikit!

Did Tan-Jack have the power to draw all the way from four hundred feet below us?

Bill and I started to pick ourselves up. We were pulled to the edge of the window.

Pat-pat-pat-pat—

Tan-Jack! He was coming up. Up the side of the tower. Moving fast. Up through the semi-darkness. The suction-cups of his feet and legs were sounding louder, closer—thwap-thwap-thwap-thwap—

We rolled out of the window and onto his back. His savage head tossed about, he turned around on the perpendicular wall, and taxied us down.

CHAPTER XX

The Battle

THE guns blazed that night. We spent the first third of the night getting safely through the Seventh Point lines. Several times we thought we were goners—once when a disappointed helicopter took after us—once when the three big guns from the Menniker fortress started blazing away.

We found Vedo at midnight. There were so many important Martian officers on the scene that a senator from Washington didn't have much chance. The orders were flying thick and fast. Martian dead were being brought back by the scores. Some of the impetuous troopers had tried another heroic raid on the warehouses and had been stopped by one of the big guns.

"Oh, it is you, the senator!" Vedo exclaimed, when Bill and I were at last given permission to ride up to her torchlit headquarters. Her blue-lidded eyes fluttered with excitement.

We dismounted, and Bill stood with his arm around the neck of Tan-Jack, and we all three bowed. Tan-Jack was as unassuming as any hero could be, but it was to Tan-Jack that Vedo demonstrated her forthright affections. In her scale of values, I was the senator who had been Vorumuff's friend, and I saw the gratitude shine in her

eyes as she recalled that I had rescued her from an execution. To her, Bill Rambler was the mysterious friend who had won the confidence of a few natives, so that they had been willing to lend him Tan-Jack. We were both gratefully received. But Tan-Jack was received like one of the family.

"Until the battle is over," Vedo said, "whether we live or die we do not know."

"You must live," I said. "You must go back to Washington, to my American capitol, so my country will make things right with your people."

"We cannot make more treaty," Vedo said, "if big ships will always fall on our hills."

There wasn't much time to talk, but we came to a quick understanding then and there. This battle had to be won, Vedo declared, to drive off the rash "shooters and killers" like Menniker and the men of the tower—"and such earth woman as Weeks."

"Sarah Windblow Weeks! Is she one of your prisoners?" I asked. "What's happened to all of the Blue Palace passengers who came through alive?"

"Some of them fight with us," said Vedo. "Some waiting in caves to see which way wind blow. Weeks, she like you say, see how the wind blow."

"What about the Bells?"

"Have you not heard them?"

"I mean Bobby and Betty, the musicians."

"Yes, the Bells. You have not heard? They help me make the war. They play old Martian war song on hammer instrument."

A few minutes later Bill and I heard this for ourselves. Vedo was very eager that Betty and Bobby keep moving back and forth along the Martian line, and keep playing. So she sent us out to locate them, and that became our

task, through the remainder of the night and into the next forenoon. Each time we found a portion of the Martian circle falling back, we called for the Bells.

BOTH of them were so excited they could hardly carry out orders. Their vibraharp had been all but obliterated in the crash. But they had salvaged two sections of it, three or four notes each, and that had been enough for the old Martian song. Whenever the native fighters heard it their fighting blood raced faster and they flew into the attack with new vigor.

"It's a hell of a song," Bobby panted as he and Betty rode along beside us through the blackness. "It even makes me want to fight, and I never fought in my life."

"Nobody but my stepmother," said Betty. "You've had to fight her. Everybody does."

"If I ever come out of this alive I'm gonna give her a fight she won't forget," said Bobby.

"What are you going to do?"

"Invite her to a new kind of shotgun wedding, with the guns pointed at her."

"Honest, Bobby? Will you?"

"And if she utters one false peep when you and I say our '*I do's*', I swear I'll tie her on the back of a wild rikit and give her a one way ride over the mountain."

I entered their plans at this point and reminded them that if we came out of this alive, Sarah Winslow Weeks could count on a paid trip back to Washington. "The Department of Justice is going to ask a lot of questions, and she'll have to talk faster than she ever talked before."

"Will they charge her with treason, Senator Pollard?" Betty suddenly became sympathetic toward the person who was probably her worst enemy on

two planets. "Will they send her to jail?"

Bobby had a turn of heart too, and in the light of a flash from a big gun his expression showed alarm. "You see, Senator Pollard, she split with Menniker right after the crash. And she did everything she could to help Vedo with the rescue, and now even Vedo is beginning to trust her a little."

"Would you two trust her to be your loving mother-in-law?" I asked.

They didn't answer that one. Then I realized I was being harsh, putting it that way. If Sarah Weeks went to jail it would be because she had plenty to answer for from that Blue Palace affair—not because she was pretty sure to be a disagreeable stepmother-in-law.

"We'll let the law take its course," said Bobby, and to this Betty added, "Whatever is for the best. I wouldn't want her to have to take that one-way ride on a wild rikit."

The ring of Martians was broken in several places. The three big guns were shooting blind, and only a few times had they caught the advancing line. Toward morning they were shooting over it, and almost all the Martian fighters were gathering in the canyons immediately below the tower elevation. The Martians held back their fire. They had too little to be effective against the concrete fortress. Their one hope was to move in close enough, before daylight, that they could storm the warehouses and fight an inside battle with pistols and knives.

At the first streak of dawn they were discovered, and they beat a fast retreat into the deepest canyon below the tower. Vedo and her officers remained at a distance of a mile, and there the Bells and Bill and I joined them to receive orders.

We watched the big guns flash their

fire down over the pitched surfaces of the mountains. The canyon pockets were too deep to be hit. Martians and rikits were safe down there, but they were also virtually prisoners. Their attack had come to a stop. Daylight was on us. We would have to hold our positions through the day—or *could* we? Something was happening.

Guards and workers from the tower fortress were being called back. *Why?* For the next half hour we watched them working their way back gingerly over the steep slopes. Now and then a Martian crackshot would pick one of them off and he would roll back down into the shadows.

SUDDENLY the tempo of the mysterious Menniker retreat was stepped up. The men in workers' uniforms were racing back as hard as they could go. Through the arched entrance. Into the square-cut doorway of the concrete base.

"Shall we go after them?" Bobby said. "Shall we beat the war song again and have the Martians give chase?"

"Wait," said Vedo. "I do not yet understand."

Bill thought it was a trap. "That's just what they want us to do—follow them in a group and get our heads shot off."

"No, I think something else." Vedo's beauty was matched by her courage, I thought, as I watched her now. The fate of the Seventh Point hung in the balance. And the fate of the American destiny on this planet. Vedo stood calm, watching, waiting.

It was one of the Martian officers who discovered what was happening—a tall, keen-eyed, bronzed specimen. He pointed to the sky. He spoke in Martian.

Vedo passed his words on to us. "This time perhaps all lost. A cargo

ship is coming down out of sky path."

It was beyond me how the Martian could have spotted the black speck in the vast yellow sky. But he was right. It was coming. It was some sort of space ship, about to arrive at the Marshington port.

"Their machines," said Vedo, gesturing toward the tower, "will bring ship down—*crash*—on top of *canyon*. Crash hard to *kill our army*. We *lost*. . . . We *lost* . . . We *lost*."

Her thin fingers moved upward across her cheeks as she watched. The speck was growing larger. Moving down. Coming closer.

I thought a thousand thoughts in the next awful minute. I ran, I shook my fists, I leaped down along the rocks, and might have fallen over a cliff if Bill hadn't raced up beside me on Tan-Jack and drawn me on.

All of us, Vedo, the Bells, the officers, were riding now toward the canyon. A strange gesture of lost hope! No miracle could have got us there soon enough to warn the Martian army to scatter. It would be caught.

I thought a thousand thoughts, and all of them were remorse for wasted opportunities.

"If we had only blasted that tower, Bill," I cried, "if we could only have known it would come to this—"

"The Martians *would* have had a fighting chance," Bill agreed, yelling back at me as we galloped on. "But that invisible hand will beat us now. In another minute—hey, *wait! Wait, all of you!*"

Tan-Jack was the first to heed. He slowed up so sharply that only his drawing power kept us from sliding over his head. Then Vedo whirled and turned back to us.

"What is it? Are we wrong to hope? If we could signal them to scatter—"

The ship was almost over the can-

yon. There wouldn't be time—

"But Menniker *can't* blast that ship down!" Bill said. There was a strange glint of humor in his eye. I thought he was giving way to some kind of panic. "No, they *can't*. Not unless—"

"They didn't miss on us," I growled. "If they could do that well when Jattleworth was drunk, what'll they do when they're on their toes? This time they've got a target. It'll be slaughter. Here it comes—"

"It *won't* come!"

"Why not?"

"Those explosives I tied under the tower elevator! *I wired them to the invisible hand.* If they snap on the switch—"

A flash of fire burst from the middle of the tower. It blazed out like a new sun. Tan-Jack leaped back. In his surprise he let us fall off. He didn't even turn to apologize, and we lay there on the rocks, too fascinated by a wonderful explosion to think of anything else.

Brrrrummb-blumb-blanc-blanc!

The space ship that was riding over didn't even wobble. It steered straight on toward Marshington and in a moment was forgotten. But the blaze from the tower—that wonderful, glorious explosion—that was the thing! I could imagine Menniker's face—if he still had a face. Which I doubted. There was probably no longer a Menniker, or a Jattleworth, or dozens of ship-crashing officers who had dreamed greedy dreams of a private Menniker Empire.

Instead there was a ruined tower, engulfed in flame and smoke. And there was a *Martian army, riding up over the canyon walls on trusty rik-its...*

WHEN the smoke of battle had cleared, later that day, and a

Martian victory procession was forming to ride to Marshington, Bill and I rode back to the scene of the Blue Palace wreckage.

I hadn't remembered much about my dazed hours of walking away from that catastrophe. But one dim vision had haunted me. A mound of sparkling rocks and a little hand-written card, "Here lies Patches Black."

"Here it is," Bill said quietly, and led me to the mound. The card was there, fastened to a stick. The letters were in my handwriting.

"You knew him, didn't you?" I said to Bill. "If it hadn't been for his rash act, Menniker and McCune and Romanoff would have set themselves up at the top of this planet, against America. We owe Patchy a lot."

"I've always owed him a lot," said Bill, bowing his head.

"You knew him quite well?"

"He was my father," said Bill.

We rode back toward the rest of the American party. Already Vedo was making provisions for their safe transportation to Marshington.

"I didn't know who you were when I came upon you, burying my father," Bill said. "I could only stand back and watch. And when I tried to talk with you, you didn't hear. You were dazed . . . Later I followed you."

"Where did you get the name Rambler?"

"I took it on my own, after I learned that I had been reported dead. I thought it would give me a better chance to see the inside of the tower plot. I tried to get word through to my father that I was still living, but must have failed."

"Your father pretended he was my valet on the Blue Palace. I've lots to tell you about how he stuck with me."

"I'd like to stick with you too," Bill said, smiling, and tossing his head in a

way that had reminded me, subconsciously, of someone I'd come to trust.

"Then come back to Washington with me," I said. "With you and Bobby and Betty—that is, if they'll postpone their honeymoon—"

"And Vedo—"

"And a few prisoners we picked up at the tower, *we can't fail*." I glanced toward the ruined Menniker fortress. "Say, I wonder what happened to Stubble-chin that we left up in the tower."

Bill grinned. "He came through alive, but he had a close shave."

SHAVER ON INERTIA

Some of our readers have questioned Richard S. Shaver on his science of inertia in his stories. Here is his word on this controversial subject. What do you think about it?

LOOKING back over fan mail, I find one of the most misunderstood points of my so-called revolutionary (or blundering) science, was the phenomenon of weightless acceleration in "Invasion of the Micro-Men." This was also the case in "I Remember Lemuria."

Often I think about this, and wonder why it is so difficult for technical-minded fans to see that a weightless object will receive infinite acceleration from any impulse.

Also that a weightless object will be stopped by any weight, any impulse in the opposite direction.

It seems to me a sample of the difficulty the mind experiences in imagining any conditions that are different from the conditions it is used to observing around it.

Here on Earth's surface we have never had the opportunity of observing a weightless object, hence we cannot agree when someone baldly states that a weightless object will start off at speeds beyond light if given any push at all (in a non-resistant medium).

We above all cannot admit that a weightless object will be completely stopped by collision with an object one-millionth its size, if the object is traveling at a million times the former object's speed.

There are in truth some highly complicated conceptual differences that will only be settled by actual experiments in space beyond planetary attractions, or in space between planetary bodies—as between Earth and moon, where the point of gravity nullification is reached.

Our concept of mass and speed—as it usually exists in our mind—is a mingled one, of mass plus speed, of momentum plus weight, of inertial drag against accelerating force.

We just can't think of weightless objects without weight and all the usual phenomena of weight. The standard physicist concludes without indecision that momentum must cause an object to insist upon going in the direction of its momentum *with all its weight*.

I have a suspicion that a weightless object does not have this weighty will to continue in its appointed orbit; that momentum times mass is not necessarily all there is to know about impact; that foot-pounds is not the correct formula to apply to moving things in free space.

I could be wrong. But I will not admit to the blunder till someone shows me a weightless object, away from any gravitational influence, which yet has foot-pounds of energy without any pounds in its mass.

I do not believe that the correct formulae for inertia and momentum yet exist. Nor that the ordinary concepts of bodies in motion in free space are correct.

The physics books list five properties of matter. *Weight*—attraction of the earth. *Mass* (two)—a definite quantity of matter. Three: *volume*—the space it occupies. Four: no two objects can occupy the same *space* at the same time. Five: *inertia*—matter at rest tends to stay at rest, matter in motion tends to remain in motion. They list two kinds of inertia, inertia of rest, and inertia of motion.

Yet, that the first and the last on this list, weight and inertia, are inextricably linked, is apparent to anyone who tries to lift anything heavy. The less weight, the less inertia. Yet—in *AMAZING STORIES*—fans stand up and holler when I carry this obvious observation to its ultimate indication.

Very light things are easily started, and as easily stopped. Volume and mass, weight and inertia, and impenetrability—all properties of all matter. Yet is it not clear that it is not clear just which is which?

A weightless object can be started at an infinite speed—if you have a flow of energy traveling at that speed to get the kick from. You say "where is that energy to drive a ship at that speed?" Any electric current . . . any electronic wave and many other waves—and all of them are capable of manipulation. The speeds of waves vary greatly: some find the conducive medium more resistant

than others.

How do we know at what speed electronic flows travel outside Earth's gravity? Radar! It went to the moon and back, and was under the gravitational influence of both bodies—and traveled at predicted speeds—or so it was reported. We do not always believe that the reports are not doctored to make the savants look infallible, however.*

A heavy object possesses a large inertia of rest. A light object possesses a slight inertia of rest.

A heavy object possesses a large inertia of motion. A light object possesses a slight inertia of motion.

That is orthodox science. Yet several fans bawled me out for insisting upon it!

Hereafter, in my wildest moments, I will slyly insert the word "orthodox" and avoid these impugnings.

There is no reason for not assuming that once a space ship gets out of the field of gravity of a planet—it will not at once assume the full speed

*The day the feat was announced, newspapers carried a chart showing distance in graph form. The caption accompanying revealed a discrepancy of $\frac{1}{2}$ in distance and time. This was later revealed to be an incorrect caption. Was it?—Ed.

NOT SO STATIC ELECTRICITY

PRACTICALLY everyone at some time or another has done tricks with static electricity.

Almost all children have been entertained by rubbing their hands over cat's fur, or by making a weak magnet out of a piece of amber by rubbing it. It's an entertaining trick, but static electricity can be very dangerous and costly. The National Fire Protective Association says that over \$3,000,000 a year is lost in fires originating from belts and pulleys which set the static electricity off.

This of course is only one type of damage done by this silent explosive. Not so long ago, a physician answered a night call. It was cold, so he bundled up in a fur coat and rubber boots, walked to the garage. The gas fumes ignited from the sparks on his clothes and blew him through the door. A rubber manufacturer had over one hundred static fires in a year before he started moistening the atmosphere in his plant by using jets of steam.

What is static electricity? We know it is a definite threat wherever a volatile substance is used, or where there is an abnormal collection of dust in the air. The United States Bureau of Standards calls it "electricity that is standing still." We don't usually recognize its presence until it starts to go somewhere in a hurry. It was once thought that static could only be generated between two unlike substances, but now we know that it can also be generated by the separation of two substances formerly in contact. This results in the excessive action of electrons and protons

of its exhaust gas. Likewise there is no reason for not assuming that the exhaust gas itself will, in weightless space, at once assume an infinite speed—because its particles are weightless!

Those two highly orthodox laws of physics added together indicate completely that "infinite" speeds far beyond light speeds are not only possible but unavoidable in space!

Yet a writer trying to be reasonable gets jumped on for distinctly orthodox science, while the really "wild" and new and revolutionary truths never before uttered in science fiction go totally unobserved.

All right, so I said infinite speeds. Just what word do you use for the uncomputable speed a space ship would travel if weightless gases do give a greater kick than gases at Earth gravity levels?

The converse can just as well be true, and the weightless gas in the weightless ship may be unable to give a kick at all!

It didn't have any weight, and consequently couldn't recoil properly in the standard rocket reaction! How do you know, till you get out there and try it? I for one think a little explosion will create its own (back-wall of) force to kick with and send a weightless ship along at speeds beyond light's speed. Prove it wrong!

Would like a definition of blunder, too. Darned if weightless acceleration is one!

within the objects.

Static can build up an amazing voltage. A person scuffing across a thick rug can build up 10,000 volts, while trucks running along the highway hit as much as 40,000 volts. Gas through a hose can build up 500 volts, that is why the nozzle is held against some metal object, usually the cap of the tank.

Even in the operating rooms of hospitals static can be very dangerous as anesthetic vapors are highly explosive. When in the operating room people must pass over grounded metal, no wool blankets may be used and the face mask must be removed slowly.

One of the best known static accidents was the explosion of the dirigible *Hindenburg* over Lakehurst. Many industrial accidents happen through these explosions, but what is more surprising is that certain individuals can store up considerably more than normal voltage. In California, one woman who worked with a pail of liquid cement caused seven fires before it was discovered that she carried high voltage. A certain truck driver burned up three trucks in a few days before he was given a new job. This list could go on indefinitely, but one more should show us how dangerous and erratic this electricity can be. A farmer in Yakima, Washington, was spraying a large field of apple trees on a windy day. His clothes became saturated with the spray, but dried as he walked toward home—the static he generated set his pants on fire.

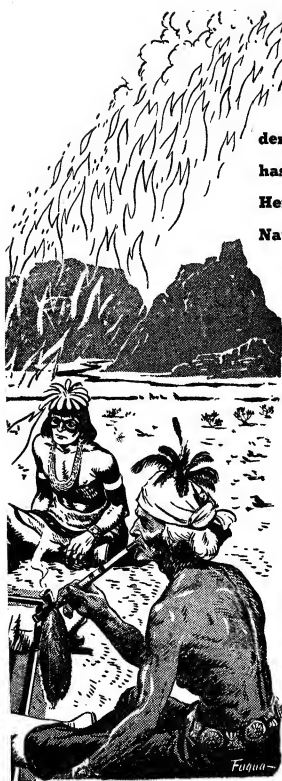
Pete Bogg

The FIRE TRAIL

by OGE-MAKE



I walked up and up, on a pathway of flame . . .



The American Indian has demonstrated many times that he has knowledge of a strange kind. Here is a true account of a weird Navaho ceremony and its result!

A SINCERE WARNING

IN THE following pages you will find an accurate account of what happened when Oge-Make walked the "fire trail" of the Navaho in the summer of 1947. To walk the fire trail is to leave your body during a trance and travel, not only through space, but through time. Many times the Navaho have conclusively proved they have this weird power—but this time they were trying to prove nothing; only obtain an answer to the grim problem that faces them this winter. Instead, to their disappointment, the walker of the fire trail brought back a message of vital importance only to the white man. Through our mutual friend, scientist L. Taylor Hansen, they have passed the message on to us. We pass it on to all Americans—and we believe it! Read it and think!

"YOU sent for me?"

I looked around the circle of lean, hawk-like, copper-skinned faces lit fitfully by the light of the campfire, and the thirteen pairs of dark eyes fastened on mine. The ceremonial blankets over the shoulders of these men blended into the star-dusted blackness of the night. Here and there a bit of silver or turquoise setting caught up the gleam of the fire. I repeated my question in a different phrasing.

"Word came to me through Running-Deer that I was wanted by the Elders.

I left my classes in the University to come to you, my people. What is it that you wish of your pale son?"

A man rose from the circle and waved me to a seat on the desert sand. As I glanced at the spot I saw the lean, graceful, bending figures of a Navaho sand painting. I hesitated a moment. Was this a Navaho ceremonial? The Navaho have been traditional enemies of our tribe. What could this mean? Again the leader waved imperiously and I sank to earth on the sand-painting.

Then in the flickering firelight, I saw that the leader was my grandfather, looking more majestic than I had ever remembered him looking as the ceremonial blanket was gathered and held like a Roman Senator might hold his toga. Only the wind, playing across the wide expanse of fantastic desert land about us, accentuated the silence. Finally he began to speak:

"Yes, my son, we sent for you. I am going to reveal to you a secret of the past. The time has come when it is necessary for you to understand. I have brought you up from babyhood in the ways of my people. I have taught you the lore and ceremonies. You have been one of us. Even though you have desired to learn of the white man in his schools, yet in the summer times would you return to learn of us, and bring us the results of your mounting knowledge. That was good.

"You have thought yourself to be the unwanted babe of my daughter who eloped with a white man. I told you that to keep you one of us. The truth is that the river brought you to me during a flood. I never knew your parents. I had hoped that you might be part Indian but it becomes evident to all that your parents were white."

My brain whirled at this revelation, and I struggled to control my expression. Not my grandfather—this mag-

nificent old warrior I loved so deeply? Not my people—these men to whom I felt such an inexpressible bond of affection? Not mine?

I searched each face. Behind the mask-like expression, I fancied the old affection I was so used to seeing still lingered undimmed. Yet I sensed trouble there, too. Those eyes were watching mine hungrily like children watching the eyes of a beloved leader. Then I saw the Navaho with their knotted-up hair. There were four of them. Their eyes were curious and not unfriendly. Yet they had a sort of haunted quality about them. Their blankets were ragged and their bodies were bags of bones. I swallowed as the significance of this hit my brain. Hard times must have struck these handsome, haughty silversmiths and weavers.

My grandfather's fine ascetic face drooped slightly in the firelight. Not that anyone could have suspected that droop but me. Yet I knew that this confession was not easy for him to make. I wondered why he was making it before all these men—including the strangers? As if answering my thoughts, he continued:

"Terrible times are threatening us all, my son. In our mutual danger, old misunderstandings are being forgotten. We are all Indians. First the Pueblos joined their councils, seeing that always one was in danger, though not ever the same one. Wassington* always threatened the lands of one of us by some bill. If we get enough people to stop one bill then they pass another. Now our brothers, the Navaho, are in trouble."

HE FOLDED his blanket around him and sank silently upon the earth. Then from his side of the fire a pitifully thin, shrunken old Navaho

* The Indian accent gives "Washington" a hissing sound.—Ed.

arose. His quavering voice spoke in broken English and I wondered how much of my grandfather's speech uttered in melodious Keresian he had understood. After casting a tiny whiff of corn pollen to the four directions and blowing something into the fire, he began:

"Once Navaho strong people. Our ho-ghans dot plains. We ride for buffalo. Never take all animals—only old bulls or crippled cows. No Indian kill for fun—only white man. Buffalo strong, deer people strong, and Navaho strong. Then white man kill for skins. Leave buffalo rotting on plains. Many like sands rot on plains and make smell of death. Navaho know he must fight white man. We have no guns like he have. We have only arrow and stone hatchet—and great courage. We fight hard. No use against guns which kill far-off. Navaho rounded up in great red canyon of death. Soldier kill women and shoot little children. My mother and baby brother die. I hide in bushes and pray. Soldiers go way but one day find me hunting rabbit and send me on Long-Walk."**

I knew the old man was referring to the exile from which one-half of the tribe died. After a pause, he continued:

"I will not speak of Long-Walk. To Navaho it was time-of-greatest-sorrow. Many dropped to die in desert. But in time people come back to own lands, build ho-ghans again. Raise sheep.

**Long-Walk refers to the exile of the tribe following the massacre in Canyon de Chelly and Canyon del Muerto in 1863-64. It was at this time that General James Carleton of California Column renown had begun what he had chosen to call "The reduction of the Navajo." He was joined by Kit Carson and some 800 New Mexican volunteers. After the massacre, the tribe was rounded up and marched 800 miles to the east, to Ft. Sumner on the Pecos River. There smallpox finished the nefarious business that massacre had begun and only a pitiful remainder struggled back to Chinli and the "Red Canyons" in 1869, after the treaty of '68 had been signed.—Ed.

Catch some mountain sheep for strong wool. Forget Long-Walk. Weave rugs and white man buy. Make silver-work. People happy. Then come men from Wassington. Him say too much sheep on land. Mebby so. Mebby kill few, but Wassington send men to kill most all sheep. Wassington kill sheep when young men fight across waters. Now no sheep. No wool for blankets and Navaho hungry. What can we do?"

Then arose the husky figure I recognized as the head snake-priest of the Hopi. He spoke briefly of the bill which would have separated the Hopi from their corn fields,* but which was defeated. He ended with a bitter plea for the vote.

"Must only Indians and the insane be considered unfit to vote? Why are Indians classed with the mentally deficient?"

His language reminded me that he had once obtained a degree from a university. He was followed by a stranger who introduced himself as a Yee-Hat from Alaska. His plea was that against sacred treaty, the Alaskan Indians have just been separated from all their inherited lands. This bill was passed in the closing days of the '47 congress when debate was limited, and at the recommendation of the Indian Bureau! Before all this had time to fully impress itself on my mind, my own tribe was again speaking. The subject was the old nightmare of the dam.

"Why must New Mexico build her dam where the water will back up and cover the lands and sites of five pueblos? Some of our people have sworn to die in the rising waters which will cover our farms, our sacred pottery

*The Bursum Bill. This Hopi Bill was attached as a rider to a veterans pension bill. Alert white "Indian Defense Club" of New Mexico rallied enough letter writers by lecturing women's clubs, to defeat it.—Ed.

mines and kilns, and our dance places which were already ancient when white man first came to the land!"

After a pause, he asked the question in English: "Why is it always our lands or our animals? We Pueblos never made war on Wassington. Now they take our food by drowning our lands. These corn fields were ours before the memories of men. What can we do?"

Everywhere I looked, eyes were asking mine the same question "What can we do?" I wanted to cry out! To tell them it was not my fault! That I was just as helpless as they were! I wanted to shout: "Who am I? What can I do to stop this wicked march of greed?" But my grandfather had arisen and his voice was flowing out in the liquid tones of my own beloved Keresian Pueblo tongue:

"I know your thoughts, my son. You have not as yet learned to hide them well. Yes, we know you of yourself can do nothing. But tonight we are asking you to intercede for us. We have chosen you because you have white blood and know the way of the white man, yet your soul is ours. We are asking you to go to those who make your laws and learn from their minds if there is hope for us. We ask you to do this not in body, for we do not have the money to send you, but in the Indian way—in spirit. We ask that you walk the Fire-Trail!"

I GASPED at the shock of the revelation. The holy-of-holies reserved for medicine men—this adventure was to be mine! I began to remember the stories I had heard from childhood—how one man sent his spirit to Mexico and warned his son who had gone to trade turquoise, of the approach of Aztec slavers! I remembered the far more recent story mentioned in "Jungle Trails and Inca Ruins" of the medicine

man who sent his spirit up the river to explore for the author and who minutely described the death of a chief in a distant maloka which the author himself verified some two months later when he had reached that point. I remembered the well-authenticated trip of Chief Seattle who described the city that later bore his name. Other cases flashed to mind. Sees-The-Living-Bull early in the contact of white traders saw the passing of the buffalo and the coming of short-haired spotted cattle—a description which must have bewildered his hearers who had never seen a cow. Many other cases flashed to my mind. Some had traveled in space only. Others had traveled in time.

"Will you go, my son?"

I nodded as I felt my temples throb with my rising pulse. Of course I would go, but . . . how could I be sure? Again my grandfather read my thoughts.

"Since you are a novice and it is your first trip, you will not be able to guide your journey. Yet we must send you because our most able guides are aliens in this white man's world. There you are at home. We have sung the songs and said the sacred prayers for your journey. You will go forth. It may be that you will return with a message. Are you ready?"

"I am."

The medicine men of four tribes circled me, dusting me with pollen. My grandfather took a cup from one of the main medicine men and held it aloft in prayer. Then he came over and offered it to me. His mask-like face betrayed no emotion but his eyes seemed to smile courage into mine. Then returning to his place, he sank again upon the earth.

"Drink, my son."

I tipped up the pottery goblet and drank. The stuff was not too pleasant, but I allowed no reflections of distaste

to cross my face.

"Now take the ancient peace pipe and blow the sacred smoke."

I accepted the old red sandstone pipe from the frail Navaho and exhaled the smoke to the four directions.

"Now, my son, stare at the fire while you chant with us the prayer of the Fire-Trail."

The drums which had begun softly, some time before, now arose to a crescendo and the throbbing chant began:

"Lord and Master of all the elements of life, from whence all came and into which everything goes, guide my footsteps upon the Trail-of-Fire. Upon the pathway of flames do I walk in beauty. Upon the pathway of flames do I walk in knowledge . . ."

At first I was aware that the fire had been ceremonially built. This meant that it had probably been lighted from flints struck into cedar shavings and carefully nurtured by cedar boughs placed in a crescent, twelve at a time, in groups of four. I was aware of the pleasant odor of burning cedar mingled with the scent of sage which drifted in on the desert wind, of the dancing flames and the cool sense of vastness.

Then my head began to throb, and the pulse of the drums began to be as a hammer on my temples . . . "Upon the pathway of flames do I walk in beauty."

Yes, the flames were beautiful—like swaying orange hands with purple nails—like expanding veils—like corridors—strange undulating corridors that grew and grew . . . They grew until I was walking upon their undulating color, until I was but a fragment of smoke carried high upon the emerald and violet veils that swept from a volcano. Higher and higher I was carried. Far below me, the mountain was belching forth lava and fire over what appeared to be a teeming jungle. Above me, the heavens were turning dark and

the stars were shining out with a brilliance I had never before known.

IT SEEMED to me that my senses were never clearer, except for that of touch and its kindred sensations of heat and cold. I know that my mind never functioned more clearly, for I knew that I should go to Washington. Yet I was supremely elated with the spirit of adventure as I began to leave the earth. For it was quite evident to me now that I was leaving it. Furthermore, I seemed to be gathering speed. As the earth receded like a dwindling ball, it became also evident to me that I was retreating from our sun and our family of planets.

Immeasurable space surrounded me, as the sun which had been my day star retreated to the size of untold thousands of others. Ahead of me a giant sun of tremendous proportions loomed out and expanded. Yet it was soon also evident that the sun was not my destination, but a planet spinning around that sun. Then just as quickly as I had gathered speed, I swung around the planet twice with rapidly reducing rates, and at last began to flutter downward with a lazy side to side motion like a heavy snowflake.

I could not at first decide whether this was air or water through which I finally drifted, but decided it was atmosphere of a heavy variety since there was no surface difference which one would have encountered between a layer of air and that of water. Yet movements through this medium were slow, and the denizens seemed to have a fish-like quality about them, with graceful waving veil-like tails which apparently propelled them. As one of these creatures came toward me, I found myself wondering if I would be swallowed like a bug on a leaf, but apparently the monster did not even see

me and lazily turned away.

Then came the giant plants with their magnificent, jewel-like flowers. The foliage blended from the palest of greens to a violet-purple. The trees were of a slender fern type, waving their fronds in the heavy air, although some huge sprawling leathery plants were also in evidence.

"This was Planet One in their year 50,050."

I looked around in surprise at the sound of this soft, well-cultivated voice. It came from a tall man dressed in a white toga, with the features of an Aristotle.

"I am your guide," he informed me with a smile. "Do not fear to talk out loud. We can neither be seen nor heard."

"Have they no senses of perception?"

"Yes, but not for us. We belong to another cycle. Let us leave the forest area. I shall show you one of their cities."

Then catching my arm, he pointed toward a clearing.

"A flight car is coming in. They leave workers to gather honey from the flowers and return in an hour or two to pick them up again. These people live largely on honey."

As he spoke a slight drone rapidly swelled to a roar and a great shining cigar-shaped vehicle came to rest. Out of it stepped some half-a-dozen creatures who strangely resembled our ideas of the fairy. Gauzy garments of extreme delicacy floated from the shoulders of the women, giving them an almost transparent beauty.

"How strange that these people should so much resemble those of earth."

"Yes, they do. And so does their destiny. However, at that point the resemblance stops. These people have already mastered not only their own

planet but all the planets of their system. All are well-run gardens for the people of One."

He made a deprecating gesture.

"Of course, part of their more advanced condition is due to the fact that they discovered the value of fuels earlier in their history. And in part it may be due to the fact that being a more frail creature upon a larger planet than man in proportion to his birthplace, their intelligence was more advanced than man's when they began their conquest of their planet. But now it is the year 50,050. Remember that date. It is the hour of their destiny."

WHILE I was pondering over the meaning of these words, he beckoned me into the airship. We entered and found it a spacious affair. The engine room of the ship was in the nose and was set off from the rest by great glass panels, and many of the creatures were crowded along these panels to watch the working of the well-run engines. The rest of the salon was equipped with shining threadlike lounge swings and hammocks. Great flowers of jewel brilliance climbed a lattice-work. I decided that at least a part of the light which flooded the interior came from the walls, but not a small portion of it came from the pulsing color of these magnificent flowers.

As I turned to say something to my companion, I saw that the great sliding doors were closing and in a moment the ship was in the air with the forest becoming but a greenish blur far below us. We must have left the ground with a tremendous rush of speed.

"It is strange that we haven't more sharply felt the pull of gravity from such a large planet."

"The ship is insulated, as it were, with gravity nullifiers and giant internal springs," my guide answered. He

walked toward one of the huge windows and I followed.

"This planet was once a heavenly place. The natural balance here was working splendidly. To offset a greater distance from its greater sun, than that occupied by Earth, there was a larger amount of internal heat. Thus the temperature was not much different from that of Mexico on Earth. But civilizations grow upon fuel. Like the people of Earth, these inhabitants first used their natural vegetable and mineral fuels. Nuclear fission came some time after their mastery of their own planet and its use was rigidly controlled. Radiation danger was kept at a minimum for thousands of years. There was no disastrous releasing here such as would have come with an atomic war. But look at the beauties of One!"

We were gliding in the heavy, bluish air through which the sun cast fantastic wavy shadows caught by the fern forests glimpsed now and then as the ship dropped down lightly to take on or leave off passengers.

"These creatures have never been carnivorous. As I said before, they live largely on the honey of these giant, luminescent flowers. The honey is syphoned into storage tanks along a part of the hull. Perhaps that partly accounts for the fact that they have never been too warlike—that is, up to now."

"They are becoming war-like? With whom . . ."

But I didn't finish. The ship again zoomed into the sky, but this time barely skimmed over the tops of the lacy trees.

"Is something wrong?"

"No. We are about to land at the First City of One. The First City is the world capital. Look ahead and you will soon see something glittering in that direction."

"Yes, I do!"

"Those are the massive glass domes of First City."

"Why do they build their cities under glass? To preserve the heat?"

"No. To keep out radiation. And they are not glass as we know it on Earth. This is a chemical compound of One. Radiation has been a growing nightmare here for many generations."

"How long is a generation?"

"It used to be several hundred years because life was so easy and pleasant, but it has been growing shorter."

"Why?"

"Radiation poisoning."

That statement had the effect of making my very stomach do a flip-flop. My thoughts flew back to my own studies in physics. I remembered Ernie, who had been on Bikini Atoll, and what he had told me of radiation poisoning. Of how the little fish infected the larger fish, whose death passed the infection to the algae which in turn infected the very ship hulls of clean boats. . . .

"Stop dreaming! We are landing and you are missing the sights. Remember that you will not pass this way again."

I CAME to myself with a start and stared around. The space ship had slipped through a great dome which had closed over it. From the air I imagine it must have looked like shining lips opened and swallowed the torpedo-like space-craft.

As the huge sliding doors of the ship again slid apart, I found myself looking upon immense cavern-like walls that glowed with a faint green light. These walls in which we found ourselves as we left the ship were in the shape of a globe, but almost immediately a part of them rolled back, revealing a purple and green forest lit almost entirely internally by the great

light-pulsing flowers. And now I was due for a new surprise, for the diaphanous robes flowing from the shoulders of what I had supposed to be the women were in reality wings. These creatures had large wings of the iridescent type such as are used by the dragon fly of Earth. Simultaneously, I also made the discovery, as one passed close to me, that their bodies were covered with either a tight-fitting garment, or were covered with minute scales which gave the impression that their skins had been dusted in silver dust, whose metallic gleams caught every refraction of the light-pulsing flowers.

As the stream of people (for I still thought of them as people) entered the forest of flowers, fountains of water sprayed up from all through the forest, and these lovely beings spread their wings and fluttered through the water with every evidence of great enjoyment. The sight of them flying, turning and whirling was truly a thing of beauty, for as the flowers pulsed various colors, so the water drops and the bodies of these beings with their glittering wings all took on and reflected color until they seemed like living jewels.

"The rain-dance is a ritual with them. One must take it in order to enter a city. The reason is radiation. Water is the best methods of removing the poisons if recently acquired."

Must that man ruin everything? But my annoyance was short-lived. Another question was inserting itself into my mind.

"I suppose the large size of the rain-drops is due to the small size of the people on this planet?"

"Right."

"And these ferns then are in truth not as tall as the Woolworth Building, nor the flowers as large as houses?"

"Probably not. Size is relative."

"Then we are not as large as we are

on Earth?"

"If you had remained the same size you could not have made the trip to the Planet One and enjoyed the beauty of First City through the eyes of its inhabitants. Again I say size is relative. On Earth you have the correct size for your cycle, but you are being given a glimpse of another cycle through the eyes of its dominating civilization."

Almost nostalgically I remembered "Wassington," the manner in which the Indian accent distorts that word. To my surprise, my guide answered my thoughts.

"You are being given a message. Concentrate on what you see and hear and smell for the time grows short, and you shall not pass this way again. Nor indeed, shall any man, for this is the year 50,050."

His words had recalled to my mind another strange fact. It is true I could hear the splashing water, the hum of wings and many voices whose drone was not unlike the mighty notes of an organ. I could smell the damp smell of forest plants and the lighter perfume of flowers, but I could not feel touch of the water. Again my guide answered these unspoken thoughts.

"As you have been taught by the Elders of the Indian people, there are only four senses. Sight, hearing, smell and that fourth which some men call intuition. These are the senses of the spirit. The others are the senses of the body."

As he spoke, we moved rapidly through the great forest of the splashing fountains and light-pulsing flowers, to see other great doors ahead slide back. Through these doors a golden light poured in, and almost immediately the fountains died down, the symphony of a thousand voices was hushed and the shining swarm flew toward the opening. As we joined them, my guide said:

"For the purposes of our visit we have been given an understanding of the strange language of One. A debate has been going on for many days. The arguments of both sides have been carried by television to all parts of One, and even to the colonies on their other planets. We are to come in for the finish. Space ships are bringing similar throngs from all the forests for all work is now being suspended, and in a moment the flower-forests of the sixteen entrances to First City will be filled with the returning throngs."

MAKING our way through the heavy air as did the others all about us on their gauze-like wings of dusted silver, now taking on the golden glow of the great domes, we circled over the city. The buildings were massive with hundreds of openings. They seemed to be made of mother-of-pearl or some other opalescent material that caught and reflected the golden glow of the great domes. The street-like canyons between the buildings glowed with their own light-pulsing flowers, and occasional fountains.

One great central structure, towering over the others, was apparently the destination of the throngs. With them we reached one of the openings and walked along a glowing corridor. This grotto or series of grottoes gleamed like a blue neon sign, and yet in a way, I was reminded of the corridors leading to the football stadium on the campus. I felt an air of expectancy, yet I cannot say that it was entirely a pleasant expectancy. There seemed to be a haunting dread in the back of the minds of these people. Talk had died down to a minimum murmur. Then we came into the amphitheatre of One.

Earth holds no possible comparison to its immensity. It must have held a million souls. One could barely see the

stage in the distance as we took our seats with the others. For many moments we waited while yet other thousands took their places. From somewhere music was playing. Tinkling notes filled its long sweeping phrases, like the splash of the fountains of which the people of One seemed to be so fond. Phrases of the symphonic music, I noted, were accompanied by color changes in the immense dome and fainter whiffs of perfume. Did the symphonies of One coordinate the pleasures of the senses?

But the music was fading and the hum of voices was dying to an expectant hush. The colors which had been changing in the overhead dome, began to die down and what I had taken for gigantic curtains above the tiny platform in the distance began to glow with the image of a speaker.

"People of One, this day Seventy-Two of the Year Fifty Thousand and Fifty is the Moment of Destiny. For days we have debated the issues before us. We know that in the early days of nuclear fission when we were experimenting with the heaviest atoms, much radiation was released. We also know that subsequent generations have had to limit space travel because of the heavy radiation trails and even go back to more primitive fuels for our own planet's use. Now the sins of our ancestors are coming upon us. All of us, even in our generation, have noted the increasing heat of One. Yet the other planets of our system with whom we have friendly intercourse and trade are just not suitable for our continuing existence. We have all known for some time now that we must someday leave One. Our daily lives have become a nightmare of heavy infection. We have not gone unscathed either. In a minor way we are all infected even now with the death of One.

"Our hope has been to get to another planet where our least infected children could survive. Our space fleet feels justified in recommending Planet X330 of Sun 32. The trouble is that this planet is infested with a civilized form of life which has the gunpowder weapon that it uses upon its own kind. To attempt to reason with such individuals would be absurd. To use the fission of the heavy atom would be equally absurd because we would immediately sow the seeds of radiation poison, which is *all* we are attempting to escape from here.

"Whether the people of One who have thus far made their way without the destruction which more savage creatures call war, is justified in now taking a planet by force, is the question. The people have voted for war!"

AT THIS point a tremendous demonstration of stomping and wing-flapping was drowning out the speaker. The face faded from the screen and another took its place.

"That is *not* the question. Because I do not believe in war I have been accused of having sympathies with these miserable creatures of Planet X330 who kill their own kind. Obviously they are still in a savage stage of evolution. Whether they would ever develop a civilization comparable to One if allowed to go their way without interference, is a moot question. BUT I do object to this new weapon developed by the military! This weapon uses for its fuel the tremendous force of the exploding hydrogen atom! I object to this because it is dangerous—even more dangerous than uranium radiation!"

Again the first face took the screen.

"My opponent has brought up the question of the new weapon merely as a means of diverting the thoughts of the people from this new war. If we do not take this planet, then where can we go?

To still more distant, uncharted systems? We need living space and we need it immediately! Look at the freaks developing on One among the animals! Look at the new heat fissures appearing almost daily! Look at the new volcanoes! When the radium was first discovered we did not know about these deadly radiations. We did not know that these forces had to disintegrate before the planet could become habitable. We did not realize that we had unleashed a monster which would devour us. Since then, it is true that our experiments have become more and more controlled. We realize now that the core of our planet has become heavier through thousands of years of atomic disintegration, and that in spite of all our knowledge, we cannot stop the chain of fate. We must have the new weapon for the war. Then that war will be most devastating, but it will be over in a hurry, and the planet becomes ours!"

Again the slim face of the second speaker. The eyes had almost a haunted look of fear.

"When I plead for you to think twice about this new weapon I am not trying to divert your thoughts from war. I am pleading for our planet! Do you realize what makes a sun burn? It is atomic disintegration! And now with the hydrogen atom, we are stepping forth into a new field. Water is composed of hydrogen. So is our atmosphere. Shall we set fire to it? And if we do, can we stop it when we wish?"

A roar booed him down and I realized that he was pleading a lost cause. Again he tried to speak, but a roar of jeers drowned him out. Then the first face came back with the light of victory in his eyes.

"I knew that you were too practical to listen to this prophet. Now for the promised experiment! None of you

watching me shall ever forget this moment. Our civilization has reached a new peak in power! With this new and cheap fuel we can reach more distant constellations in one-half the time now required! We shall explore for more and more planets!"

For a second the opponent came back:

"And who is to say that other civilizations have not also sought this power and found DEATH? Remember that all begins and ends in FIRE." Then in desperation he pleaded: "I beg of you—do not do this thing. We still have a few years. . . . Remember that our greatest leader once said that two atoms should be sacred from experimentation—hydrogen and oxygen!"

In the jeers which drowned out his voice, I heard only those fateful words: "All begins and ends in FIRE!"

A tense hush fell now over the assembly. The opposition had said all it could and failed. The long-awaited experiment was about to take place. A general lowering the lights added to the sense of expectancy. I knew that these people of One had shouted down the voice of reason because they had so passionately wanted to believe the first speaker, yet the second really had them worried. No one could say for certain just how this experiment would turn out. Perhaps this half-cupful of water would drive a liner across the widest ocean, but what was there to prevent it from spilling over and exploding that ocean? I realized that in a way this choice was forced on them by their own desperation. They saw the cancerous spread of radiation poisoning with its heating effect—those things, when produced by nature, had to die out before a globe could become habitable.

My thoughts were interrupted by several men on the screen bending over what seemed to be a table. And then it

happened. . . .

A TERRIFIC blinding white light on the platform etched for the space of a second, on the screen above, and for eternity on my mind, the horror in the half-dozen faces of the men making the experiment, before they disintegrated into light.

For the space of another second, that gigantic amphitheatre rocked with the screams of the doomed, as the explosion on the altar of science spread with lightning swiftness in all directions through the air. Then the swarming mass of living creatures were seared to powder as the vast domes crackled and burned in the swiftly mounting terror.

My companion and I seemed to be borne aloft like a particle of smoke on the conflagration which spread with unbelievable swiftness. It was as if the planet was a picture soaked in gasoline, to which some one had touched a match. The forests writhed like souls in agony, while between the burning trees long cracks appeared in the crust, through which poured the bubbling red planetary blood of lava. Then even these were blotted out in light as the flames became higher and hotter and whiter. I knew that they must have become hotter with the heat of a new-born sun, although I could not feel them.

Nor could I even see them so well, for I was speeding away with unbelievable rapidity. The Planet One, which had become a sun, still circled its greater day star, and as I watched its magnificent brilliance, I heard my companion say:

"That was the year 50,050 on the Planet One, but as for Earth, it was before—long millenniums before—the memory of man or beast."

"Then they were not speaking of Earth?"

"No. Earth would never have been

available for the people of One. It was not large enough. We are now crossing over from the long cycle of the past—that past which might become the future."

"But One? Where is the Planet One?" I asked as I watched its fading brilliance becoming smaller and smaller with the increasing distance. Yet I could not take my eyes from its white beauty and its rainbow corona.

"Know you not of a small sun circling a larger neighbor? Know you not of a small sun with a heavy core such as might be expected from millenniums of atom-stripping?"

Of course! Sirius and its dwarf companion!

From the distance I heard chanting voices:

"Upon the pathway of flames do I walk in beauty! Upon the pathway of flames do I walk in knowledge!"

Perhaps I still had time to ask one more question.

"Will Planet One ever again become habitable?"

Through the chanting and the tomtom, I heard the voice of my guide as

if from an ever-increasing distance:

"There are some things which even I do not know."

Then the pin-prick brilliance of One became lost in the purple-tipped carmine of flame corridors upon whose smoke-veils I was lowered. . . .

"Upon the pathway of flames do I walk in knowledge."

And I found myself sitting upon the sand-painting while medicine men were sprinkling pollen upon my skin. My first words must have sounded very Indian, for I merely stated:

"I have returned."

Yet later when I told them my story, they did not betray the great disappointment which I know they must have shared. The only comment, given by my grandfather, was pronounced after due deliberation.

"We sent you out, my son, as a white man. As a white man have you returned. Your message is not for us. It is for that world of yours where you walk with such confidence. It is for white man. Go forth, my son, and deliver to that world your message."

THE END

AN EXPLANATION OF "THE FIRE TRAIL"

YOU have just finished reading a true story. We obtained this account of an actual "fire trail" ceremony which took place this summer in New Mexico from our good friend, L. Taylor Hansen, who is a good friend of the Navaho. He considered the "story" interesting material for us.

As we understand it, the ceremony is an ancient one and was attended by several different tribes; the Navaho, the Pueblos, Hopi, and even a Yee-Hat from Alaska. The man selected to travel the fire trail was to ask an answer to the problem of what to do about the threatened loss of lands, of crops, of

food, and of other rights, due to several scientific and governmental projects in the area.

When Oge Make returned from his mystic adventure, he revealed that his "guide" had not taken him on a trip to Washington, to the Great White Fathers, to get the answer to their question, and to try to implant a correction in the minds of the White Fathers, but had instead taken him on an incredibly fantastic trip into space and into the far past, to a world circling Sirius. There he was given the message you have just read!

Your editors know it is true!

PLIGHT OF THE NAVAHO

DURING July and August of 1947 the Navaho Indians in New Mexico were deprived of their means of livelihood by a series of unavoidable catastrophes and face extreme privation and hardship and perhaps even starvation this winter. The government order which contributed to this condition was for the slaughter of the herds of sheep which form the Navaho's sole support. The Navaho nation, up to now, has been entirely self-sustaining from its sheep-raising, rug-weaving and silverwork. Without sheep, they cannot obtain wool for rug-weaving; they cannot sell sheep to obtain money for purchasing silver; providing meat for food this winter will be impossible.

Perhaps it has been necessary to slaughter the sheep to conserve grazing lands from destruction, as has been suggested, or perhaps it is true that the action became necessary to prevent contamination among both Indians and Whites because of a diseased condition directly attributable to the explosion of the first atom bomb in the neighborhood, the effects of which are still being felt. Along those lines, we recently published a novel by Rog Phillips, called, "So Shall Ye Reap," which suggests a possible effect from the bombs already detonated and pointing to a disastrous effect if more are detonated. Certainly further experiments to obtain positive information as to just what effects the explosion of atom bombs have on our atmosphere, soil, climate, etc. should be carried out before any further work is done along destructive lines. However, that is another matter, already being very hotly argued by leading scientists. Right now the plight of the Navaho

people is our concern.

We suggest two courses of action, to be taken by our readers in a purely humanitarian way. First, **PLEASE SEND PACKAGES OF NON-PERISHABLE FOOD TO THE NAVAHO IMMEDIATELY, AND CONTINUE TO DO SO THROUGHOUT THE COMING WINTER TO HELP THIS HONORABLE INDIAN NATION'S PEOPLE THROUGH A CRISIS IN THEIR HISTORY.** Second, *"adopt" an Indian child, and pledge yourself to support that child through the winter.* Really be a "great white father"! Either of these things can be done by addressing the following persons:

Chief Zhealy Tso, Chinle District 10, Navaho Reservation, New Mexico.

Clyde Lyzer, Window Rock, Navaho Reservation, New Mexico.

Howard Gorman, Window Rock, Navaho Reservation, New Mexico.

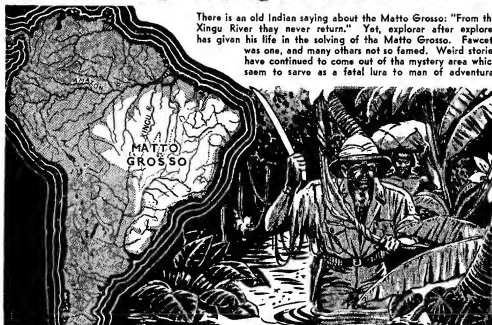
Roger Davis, Window Rock, Navaho Reservation, New Mexico.

Address your food packages to any one of these men, who will see that the packages reach those in most immediate need of help. If you care to "adopt" an Indian boy or girl for the winter, write to these four men, who will act as intermediary, or place you in direct contact with the child or child's family who will benefit by your assistance.

Let us, as Americans with a heart, show the Navaho that we do not intend to let hardship come to them, no matter what the reasons are for what has happened. Your editor for one, has "adopted" the first Navaho child and hereby pledges that child's support through the coming winter. Why don't you do the same?—*Raymond A. Palmer.*

SCIENTIFIC

There is an old Indian saying about the Matto Grosso: "From the Xingu River they never return." Yet, explorer after explorer has given his life in the solving of the Matto Grosso. Fawcett was one, and many others not so famed. Weird stories have continued to come out of the mystery area which seem to serve as a fatal lure to man of adventure.



Up the rivers of Matto Grosso have pushed the tribes of invasion upon invasion, shoving the former inhabitants ever higher up along the rivers. In so doing we are probing back through forgotten history. The dead past is a fascinating subject.



Mysterious indeed are the pale-skinned Pogras, whose favorite instrument is the "Pan's Pipes," while at the same time, their weapon is the blow-gun! Also the method of tattooing and of preparing drinks is that of the whole Pacific complex!



How can we connect these peoples of the Matto Grosso with those of the Pacific, unless we admit that they must have come from the same stock? Was there really a giant civilization in the far past, now almost entirely obliterated, whose footprints stretch across the Matto Grosso and under the Pacific?



MYSTERIES

FASCINATING MATTO GROSSO

By L. TAYLOR HANSEN

The Matto Grosso has been one of the most discussed and mysterious spots on the globe. What exists there?

"FROM the Xingu River they never return" is an old Indian saying in Matto Grosso.

Yet explorer after explorer has given his life to the solving of Matto Grosso, and undoubtedly explorer after explorer will continue to do so. Like the jungles of Guatemala, which may soon be opened by an international highway, it is a page from the past, to be read by the trained eye, for the veneer of Christianity and Spanish culture which may be thin in Mexico and parts of Central and South America, is non-existent in Matto Grosso. The natives go naively about living their lives and dancing the dances which embody their history, as their ancestors have done for millenniums.

Up the rivers of Matto Grosso, have pushed the tribes of invasion upon invasion, shoving the former inhabitants ever higher up along the rivers, and in noting their physical types, learning their words, seeing their ceremonies and hearing their legends, we are probing back through ages of forgotten history. This is what draws back the inquiring mind despite bugs, fevers, snakes, flies which bury themselves under your skin, ticks, and other annoyances which tend to discourage the adventurous white man.

The study of Matto Grosso is the study of a slave-making, rigidly paternalistic, Pacific culture upon what seems to be an Atlantic substructure, and washed over with a later wave of Atlantic migration. As one gets into the true jungles, one seems, archaeologically speaking, to be traveling backwards in time.

Beyond the shore of the Atlantic, and far enough upstream to escape the Spanish, Portuguese and the Europeanized-natives, one comes through the creeping waters, below their vivid canopy of the jungle, to the latest invasion units. The Tarianoes are perhaps typical. They came from the north, they will tell you—from the direction of the Caribbean. They came by boats. They are paternalistic now but they have memories of an older maternalism. They are extremely fierce warriors and charges of cannibalism have been brought against them. They are red-skinned and hawk-nosed with a face and skull which tends to be disharmonic. They wear their hair in the scalplock and use the horizontal or angled tattooing of The Serpent, and The Reptile Gods are highly revered. They

carry memories of a homeland which was devastated by recurring floods and a terrible rain of molten metal, during which it disappeared. That memory is confused by later memories of other volcanic eruptions for the god of the Sacred Fire is very vicious and very real to them. One suspects them of practicing human sacrifice. Their language is Aruak which is allied to that of the Karbis, an enemy nation.

In spite of the fact that all tribes steal their wives, there is quite a change to the next type. They are dark-skinned round heads. The Tukanoes are a good example. They are strongly Pacific in culture. They have dug-out canoes, a bark-beater similar to the South Sea instrument, men's societies and a rigid paternalism. They are slave-making. Unlike the Tarianoes who have one maloka and scattered houses, these people have one large communal house. It is not round like those of the South Seas however, for one sees in its construction a cross between the Iroquois and Maya upon one hand and the South Sea upon the other. The bouse is almost one hundred feet long at times, with an eighty foot height to the roof at the center beam, but such a sharp pitch that it barely escapes the ground at the sides. In this house the entire tribe lives, each family having been assigned its own compartment. In some ways, this house reminds one of the great temple-dance-bouse of The Chorotegans. Were these people once exposed to Chorotegan culture from Central America? Or could they have been an isolated branch of The Nahuas, as The Charatezons may have been? And were they forced, for the purpose of better safety to move all their tribe into one hall?

Their legends are significant. They say that they came to the land after a long sea voyage in fleets of their dug-outs fashioned of hollowed logs.¹ With them they brought the Waikanoes, and the Tupis. (The latter tribes are similar in type and in culture.) They also say that they were a wealthy

¹ The Tukanoes say that they came from the south. Their language seems to bear this out as some tribes south of the Paraguay line have certain similarities in speech. The customs of the Witotos who live hundreds of miles to the south, are a source of much amusement.

people at that time, having much golden jewelry and soft white garments. At present they have neither. They built two forts at the river mouth. One of these was called Ipanore and the other Yawarete, which they explain means "The place of the Tiger". The tiger is not their totem, however, but is in their demonology along with the reptile gods. (Did they displace the Tiger Totem by force, since they mention forts?)

They held these forts for many generations but in the twelfth century, the Aruak invasions began, with the Karibs at their backs. They were a fierce warrior tribe from the direction of the Caribbean coming in fleets of canoes, and they drove the Tukanoes upstream. Once the Tukanoes decided that they were strong enough to win their land back from the Aruaks, and they returned—to meet the invading conquistadores.

Behind the Tukanoes are the Waikanoes who are still roundheads but considerably lighter. Their culture is similar to their neighbors, but to one watching their dances, comes a discovery. The ancient Aztec dance of Huitzilopochtli,² during the month of Tlaxochimaco called "The distribution of the flowers" is here a social dance. Yet the steps are the same, and similar to the old Mexican dance, two men glide about with their hands on each others shoulders, while a woman slips between the outstretched arms. Yet the surprise of that is the dance is executed to the sound of Pan's Pipes.³ One then wonders if this dance was one of those isolated cultural fragments connected with the name of Pan. Were the Waikanoes—a detached tribe of Nahuas? Making inquiries, one learns that the name for the women's undergarment (Nagua) is the same, (though the Waikanoes seldom wear even that much.) Or, on the other hand, did both people inherit from an older sea-substructure? The name of "Pan" which was equally inherited in, the ancient legends of Greece, China and India, finds its most persistent echoes upon the eastern coast of the Americas.

However, this is not the only dance of the Waikanoes, and the others are totally different. They are done with masks in typical Amerind fashion of depicting a partial drama, to drums, rattles, bambóo pounders and a wailing chant. The story seems to be the happiness of the Butterfly (The Atlantic Zapotecs), Owl (Atlantic Kakchiquels or early neighbors of Mayans and allies of Xibalha), etc. Then the great Reptile Gods, the Tiger and other monsters try to invade the Maloka. There is a fight outside, but the first inhabitants are defeated and the second enter, in triumph. We recognize the participants of the Xibalhan fight depicted in the Popul Vuh, but the wrong

parties are allied, so its meaning must remain a conundrum.⁴

THAT the Waikanoes may be a tribe of Nahuas is possible, for their hurlal of the chief is near the house similar to the Chorotegans. Furthermore, their name, "Water-Monster" which is almost Maori in its words, "wai" being "water," would suggest that they are the people of Pachacamac on the opposite side of the continent, where is located the temple of the Great Fish God. This might explain their circular tattooing, since they were neighbors of old Chan-Chan. And it might also explain the Tukanoes, who say they hrought them to this location along with the Tupis, for both Tukanoes and Tupis declare the had white leaders at one time (Miru Clan of Easter Island and Spider complex?) who were taboo, and who, when they revolted from them, were subsequently hanished into the depths of the forest where they are still "taboo" except to hunt down and kill.⁵

⁴ Unless it goes back to the remotest antiquity when the Reptile Gods, possibly allied with the Tiger, invaded South America? One other fact gives this interpretation an added support. A giant boa, done in black and white, with anthropomorphized hands upholds the central poles of the maloka. It reminds one at the same time of the great figure at Tiahuanaco who holds up the sceptors, one in each hand, and the Mimembres pottery of the early Gila River Valley which so often pictured a giant snake done in black-on-white. This black-on-white ware of the Mimembres who were not only the oldest potters in the Americas, but also the most exquisite workmen, lived at a time when, apparently, there was no need of any fortifications from enemy tribes. The Mimembres pottery bears some curious likeness to the earliest Egyptian black-on-white pottery, which not only gives the same conventionalized serpent symbol but also a certain long-horned sheep which is pictured on the Mimembres ware. The fact which counterchecks a cultural possibility of a "Pan" civilization of unfathomable antiquity, is the roundheadedness of the Waikanoes, while both the early Egyptians and the Mimembres were of the true "Ancient Longhead" or "Peoples of the Sea". Yet even the possible answer to that is at hand. The Neighbors of the Waikanoes are the Pogzas, who bear no culture, and have no legends. They own only their eight-fluted Pan's Pipes and their poisonous blow-guns. Yet as far as skeletal type is concerned, this despised and taboo people (The American Untouchables) are perfect living specimens of the Ancient Mimembres.

⁵ These are the White Indians so numerous on the Darien coast, and are not to be confused with the Pogzas who are probably the relic of an earlier population. Some "whites" may also be intermingled with the tribes on the Xingu, and other rivers further back who are exceedingly white skinned, though seemingly lacking the blondes of Darien. The white Indians are roundheads.

² Huitzilopochtli is the Aztec war-god. He is pictured as wearing a metal helmet and holding a shield. He has many of the characteristics of The Bearded Conqueror.

³ The Pan's Pipe of the jungles is made of reeds and has eight or nine pipes, with nine being perhaps more frequent.

If the Waikanoes are a previous people whom the later invading Tukanoes enslaved, there are beyond the Waikanoes fragments of lost tribes whom the Tukanoes drove up the rivers. These people spoke an archaic Aruak tongue and pointed to the direction of the Guianas as the way they had entered the Brazilian jungles. Was there a lane of dry land once between Florida and the shoulder of eastern South America, as their legends would seem to suggest? Their culture is again Caribbean, but it holds a suggestion that it once was of a higher type than the savage Aruaks who were late comers from the Caribbean. These people have a polychrome pottery which might suggest the Chorotegans again, or a Nahua amalgamation, perhaps dating from the Xibalban War?⁶

All of these tribes seem to remember the "Great Wako" the "White Prophet" who came to them when they were living in the Amazon, though much nearer the coast. And once again the Great Reformer, healing the sick and preaching against war and human sacrifice has become a date-stone. Because of him, we know that the Waikanoes and perhaps their masters (formerly) were in the Amazon two thousand years ago. Perhaps they were a trading outpost of Old Chan-Chan, left to their own resources after the fall of the mother-state. At any rate, we do know that the Amazon was not appreciably different from the gigantic creeping river she is now, during the stay of these people, and therefore probably, during most of the life of Chan-Chan.

One of the arguments which some authorities use against Pacific migration to the Americas is that the pig, the dog, and the fowl which the Maoris are supposed to have carried with them wherever they went were not to be found in the Americas, with the exception of the dog, which everyone knows has been here a long time. The wide varieties of the large one buried with apparent honors upon the Channel Islands of California, the "hairless" of Mexico,⁷ and the two tiny toys—the Chihuabua of the northern continent and a similarly useless creature bred in the Argentine, alone speak of a long time-range. As for the pig and the fowl, Bernal Diaz not only often mentions American hogs, but in his personal narrative of the conquest, and his adventures with Cortez in those exciting days, most carefully explains the slight difference in the American species of same as compared to the European⁸. His story of how the pet horse of Cortez was fed on a diet of native chickens, which, of course, he refused to eat and therefore died of starvation, is amusing to us today, but it goes to illustrate the wonder and awe of the Indians over this strange creature, the horse, of whose habits they knew so little. And also to illustrate how plentifully they were supplied with the chicken. We can not pick up hardly any early traveller without finding mention of the "cock" or "barnyard fowls". Furthermore, Sahagun mentions the ritualistic beheading of a "cock" in certain temple sacrifices, and early travellers in

Yucatan speak of Mayan hunting dogs bred for the purpose of "seizing deer, tigers and boars."

These animals not only exist in the jungles of Matto Grosso, but are all bred naturally dumb. Thus through many, many generations of selection, those which made sounds to give the tribe away to its enemies have been eliminated. Furthermore, this same type of dumb dog was bred by the Mayans where it was used as a food animal.⁹ On the contrary, in Matto Grosso, none of these animals are killed for food but are kept as pets, thus suggesting that they are of true totemistic significance. Also, it is almost impossible to purchase one should the owner suspect for a moment that it may be used as food. If the animal was used as food by the Mayans, certainly neither it nor the boar was respected by them, for eating the animal is a totemistic way of showing disrespect.

NOW these very facts gain a new significance when we review the present complex in the South Seas. The Maoris are supposed to have carried the three animals from their Malayan region of origin, because they were edible. Since the Maoris are roundheads, except upon their most distant locations, and the natives of the Malays are longheads, this does not make for a logical totemistic picture.

On the contrary, if the animals were originally carried by the Nahuas, who must have been a long-headed people, and distributed over the South Seas as they made their way toward the Americas, and these dark-skinned longheads (tribes of them who were left behind) were later conquered by a light-skinned race of roundheads, who may have been a part of the later wave of Aryans who conquered India, and who delighted in eating the sacred animals of their former enemies, whose women had perhaps by that time, become their own wives, then the situation in the South Seas is most understandable. Furthermore, the distribution of the longheads upon the distant locations

⁶ *The Waikanoes and their neighbors the Desanoes have a number of archaic Aruak words which they probably obtained by contact with these old Caribbean fragments. The Manaoas, for example, now speak Tupi though they say that they came from Br. Guiana and thence down the Negro. Many of their oldest words are archaic Caribbean.*

⁷ *The Mexican hairless has a distant cousin in China.*

⁸ *The "razor-back" is evidently the American type, according to Diaz, to the description of which he devotes as much time as to other new world curiosities. The old conquistador was no scholar, but on the other hand, he was not blind either.*

⁹ *See Bancroft: Native Races V.2, Page 720. See Also Ximenez: Hist. Ind. Guat. for statement that the blood of slain fowls was sprinkled over the ground to be sown with maize by the Pipiles.*

of Easter and New Zealand, and the whole Aryan paternalistic system, moon-calendar, spider-design, etc., is also suddenly cleared, and understandable in the Maoris.

Yet if this is true, why is the whole Pacific complex, even to curvilinear tattooing, and methods of preparing drinks¹⁰ carried into Matto Grosso along with a totemistic respect for the three domestic animals of the former Nahuas? Thus we meet another unsolved riddle of the past. Nor do the pale-skinned Pogzas help us to understand the situation, for although their favorite instrument (and only one) is the "Pan's Pipes", their weapon is the blow-gun!¹¹

The situation to the north of The Amazon is to be more or less repeated upon the south, where the great swamps are more unending, and where the tribes of white-skinned savages who tattoo their skin with the curvilinear design of The Spider have their domain. Here it is whispered, take place the weird ceremonies to the moon which might actually carry the observer back to the time of Ancient Chan-Chan.

Yet even stranger tales drift back of the heart of the jungle, and to the student of Amerind lore, it seems altogether reasonable to suppose that there may be some basis for such stories. Great difficulties lay in the way of their solution. Many explorers start with the wrong assumption that the natives are either fools or children. Such men as Chief Kandee of the Tukanoes, for example, is neither. And there are certain unwritten laws to be observed. For example, the physician with Marsh's party followed a white Indian girl into her puberty retreat in an effort to see whether she actually was white. He was months in dying of a slow, agonizing poison. And Colonel Fawcett, who should have known better, appropriated a seemingly abandoned canoe. His fate, as well as that of his party, has never been solved.

For such men as missionaries and "black-robos" (priests) the possibility of penetrating this land is almost nil. The natives have sharp, and perhaps exaggerated memory-tales of the conquest. A tiny pellet from a hidden blow-gun is all that is necessary to end the life of the unwanted intruder, and there is no cure for most of the poisons used, even though the attacker should afterward relent, or realize he had made an error. They are determined to have no foreign religions.

On the other hand, a large party is almost always fatal. Numbers inspire fear, and fear means certain attack. To be interested in gold, of which there seems to be practically none, or any other type of gain is an equally fatal error. A rubber scout, searching for new rubber-pro-

ducing growths, of which there are wide varieties in this, the world's original source of rubber, once cultivated in the forgotten past, is in constant danger. The natives want no traffic of any kind with the outside world. They know only too well that civilization and its inroads would mean for them strange diseases, suffering and final extinction. Their location is their fortress, and they are determined to keep civilization out.

Yet for the student of Amerind lore, the region holds an unshakable and haunting fascination. Somewhere between the Tiquie, the Pira Pirana and the Xingu, far toward the south, is a morass from which these rivers arise. It is there, explain the natives in awed whispers, where lies the abode of the dead. To enter it, you must pass this morass in which great reptilian monsters, like the figments of a nightmare world, guard the portals. We have by now, learned too much of Amerind allegorical learning to take this literally. Our immediate suspicion that here some fragments of The Great Dragon may have actually come down from the immense obscurity of the past, is redoubled when we hear that there is supposed to be an underground city here, reached through giant tunnels and lit up by the great white lights, which Fawcett was so determined to see, and which he believed were the result of an ancient scientific discovery which we, as yet, have never chanced to touch upon.

It is to the solution of such mysteries as this that men like Fawcett have given their lives. Like the fabled Seven Cities of Cibola, these tales may be but the chimerical fancies of natives who have seen the sun glinting upon glacial patches in the unscalable cliffs of the great cordillera, and have combined the sight with real racial tradition of such a city in the remote past.

To this region, missionary, adventurer and scholar will probably continue to guide his canoe, undoubtedly through many long years of the future, braving alike the hidden blow-gun and the fierce, white cannibals, tattooed with the whorls of the Ancient Totem of the Spider, to where, out of a tangled, colossal swamp, rise those cliffs which resemble the wave-beaten shores of a long-vanished sea. But from these mythical regions beyond the Xingu River, "they never return."

¹⁰ Alcoholic beverages in Matto Grosso as in the South Seas are prepared by old women in what to modern ideas, is not exactly a sanitary fashion.

¹¹ Unless we admit them to be an exceedingly ancient fragment whose culture was anciently absorbed by their neighbors who may now think it their own.



COMING

"The Wandering Egos"

By EMMET McDOWELL





APPROXIMATION



MATHEMATICS was developed from three sources: the Greeks, the Hindus, and the Arabs. Pythagoras was the originator of the Greek school of thought with the mystic properties of the integers. Euclid logically developed the geometry called by his name through the assumption that only one parallel line could be drawn to a straight line (in a plane) through a given point in the plane not in the line.

Using Pythagoras' theorem that the sum of the squares on the legs of a right triangle equals the square on the hypotenuse, the Greeks developed geometry. Through the familiar theorems of Euclidean geometry the Greeks aspired to (1) find the side of a cube that would be twice the volume of a given cube, (2) trisect an angle into three equal parts, and (3) find the side of a square that would be equal to the area of a circle. These three constructions are impossible using only the straight edge and a compass.

But not all the Greeks were slavish to the use of the straight edge and the compass. Certain of their number invented special curves for the duplication of the cube and the trisection of an angle. Archimedes knew of one approximation to the area of the circle by drawing equidistant parallel lines in the circle, and he probably knew of the approximation to the circumference by increasing the number of sides of regular inscribed and circumscribed polygons.

The Hindus liberated us from the use of the abacus in numerical computations. They invented the symbol zero for the empty column and gave us the concept of positional numbers, the decimals. Present day decimal numbers are simply a representation of a counting frame extended below the units column in columns of tenths, hundredths, etc.

The Arabs invented algebraic equations. In attempting to solve them the number of mathematical concepts grew: Integers, fractions, irrational numbers. For a long time the numerical unexactness of irrational numbers was confusing, but the very idea of mathematical concepts grew.

Descartes in France combined algebra and geometry by the use of Cartesian coordinates. At first there was algebraic interpretation of geometry but later there was geometrical interpretations of many algebraic equations.

Before this article proceeds further there must be a distinction between cardinal and ordinal numbers. Cardinal numbers are used for counting a set and answer the question, how many. Ordinal numbers are used for measurement and answer the question how much. The only true cardinal numbers, in my view, are the integers. But measurement itself depends upon the accurate cardinal numbering (in standard units) of decimals. Since the mathematical concepts of the square root of 2 and the cube root of 2 cannot be exactly found by the use of integral fractions, this outrages our

primitive sense of integers and these numbers are called irrational numbers.

After irrational numbers, complex numbers began to be considered as roots of algebraic equations, but only as the real and imaginary parts were solvable by radicals could there be algebraic solutions of algebraic equations. This arose when Abel proved that general algebraic equations of the fifth and higher degrees were unsolvable by radicals. A mere statement of this fact is all that even some college textbooks contain. The unsolvability is a consequence of the fact that non-homogeneous asymmetrical groups of the roots of the equation are formed. Groups of roots of equations of the 1st, 2nd, 3rd, and 4th orders are homogeneous and symmetrical.

The differential and integral calculus depends upon the ratio of the change in the dependent variable to the ratio of the change in the independent variable of the mathematical equation. The change in the independent variable is cancelled out of the denominator, and in the numerator appears the amount of the change in the independent variable. When this amount of change reduces to a "null" change or zero, this ratio becomes the derivative. Derivatives are sometimes an integral or a fractional number but more often they are expressions in infinite series with a numerical factor in the denominator with terms of a series which endlessly increase. A more correct term for "infinite" would be "indefinite."

In the respect that a derivative is a function of the independent variable, and is an indefinite series it should be considered for convergence or divergence. Some indefinite series converge to a rational number and others do not. The derivatives that most often are indefinite series are those of physical qualities that vary with time. The indefinite series that converge but not to a rational number, approach nearer and nearer to a limit, approximating it decimally but never becoming equal to it.

The reality or rationality of a value of an indefinite series, however, depends on whether there are maxima or minima of the independent variable, and if there are these maxima and minima, where they are located. Also what is the range of the derivative between these maxima and minima.

In finding derivatives prior to using an indefinite series the derivatives compared have to be of the same category. When x can take any value from a negative endlessness to a positive endlessness, F_1/x and F_2/x are of the same category. F_1/x^2 and F_2/x^2 are two members of a second category, but be cautious of comparing F_1/x and F_1/x^2 because they are in different categories.

Some approximations are $\frac{1}{4}\pi$ which equals $4 \tan^{-1} \frac{1}{5} - \tan^{-1} \frac{1}{239}$, and e the base of natural logarithms which equals $(1 - 1/x)^x$ when x increases indefinitely.

Jack Preble

THE END

WHAT MAN

THE UNIVERSAL FIELD OF TENSION

By RALPH GIBBS

THE philosophers and metaphysicians of all times have speculated on the Universe, its beginning, its present and its ultimate states, its purpose, how it was brought about and why.

Although his work on this subject has been accorded no scientific recognition, Edgar Allan Poe's "Eureka" may easily become an outstanding philosophical achievement rather than a presumed metaphysical hoax.

In summary, Poe suggests that the entire Universe, originally, was a complete Entity, or Unity, or One, and at the Volition of God, this Entity was dispersed; that at the present moment it is either (a) still expanding, or (b) contracting in the course of returning to its original Unity or Oneness. And since Poe performed this work about 1847-48, his hypothesis of an expanding or contracting Universe antedates the same hypothesis recently of Jeans and Eddington.

Furthermore, Poe points out that what we define as Gravity actually is an inherent force in all matter tending to bring all Substance back to its original Unity.

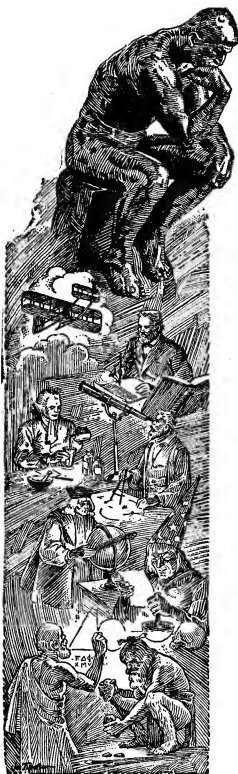
With the Poe hypothesis as a basis for further and more detailed speculation, many phenomenon that puzzle the scientists of today can be rather easily explained, and some idea of things to come can be projected.

As an example of the former, the phenomena of light is, probably, outstanding. The work of Clerk Maxwell has fairly demonstrated that light is an electro-magnetic phenomenon; but somehow or other it had seemed necessary to postulate an hypothetical Ether of Space to provide a medium thru which the electromagnetic tubes of force can function.

Now this hypothetical fluid, this Ether of Space, must be accorded all sorts of amazingly conflicting material-attributes in order that it provides the required qualities. It must be extremely ponderous, yet offer no measurable resistance to the passage of material bodies thru it. It must be tenuous yet have the property of extreme rigidity. It must pervade all Material and all Space with a flexibility beyond anything known.

No doubt this Ether of Space, so defined, is a carry-over from the period when scientific conceptions were formed on the bases of Material Principles. Today it is different.

Now we know that Material and Energy are



CAN IMAGINE...

If you will imagine it, perhaps someone will be inspired to do it. This department is for your ideas, no matter how "wild" they may seem; who knows, they may be the spur to some man's thinking and thereby change our destiny! Tell us your thoughts.

mutually convertible; that forces are at play that could not be illustrated or explained by any of the old materialistic concepts. And so the old concept of a clumsy, fantastic, materialistic Ether of Space no longer is required.

Thus this Ether of Space, with all its contradictory material attributes, can be found in the Force itself which, Poe predicts, binds together every particle of Substance in the Universe. This Force, or Field of Tension, is the connecting medium for all Material or Substance. And this Field of Tension is Universal. It is part and parcel of every bit of Substance that exists. It is an attribute of Substance just as much as Mass. And just as a movement of electrons is attended by a magnetic field, so is the very existence of Matter or Substance accompanied by its Field of Tension.

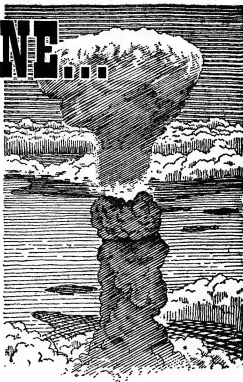
Here, then, we find that for which we have been seeking; a means for conveying a specific type of energy impulse.

And, although Substance is not evenly distributed in the Universe, this Field of Tension is, or very nearly so, depending upon the state of Expansion, Stability, or Contraction which now prevails in the Universe.

Space is another topic receiving much attention from the Philosophers. And from the Poe concept of the Universe, we can get a better concept of Space.

There is no Space where there is no Field of Tension. Thus, when we ask ourselves the question, "What lies beyond the Universe?" the answer will be "Nothing!"

We can entertain no expectancy of even searching beyond the boundaries of the Universe. No Matter, or Substance, or Force can extend beyond the borders of the Universe except at the Volition of God. Light cannot penetrate into Nothing, so its energy can but be reflected back into the Universe.



The velocity of light we can expect to be Universally reasonably constant because of the generally equable distribution of the Field of Tension. However, because there will be a slightly increased Field of Tension in the immediate neighborhood of concentrated Masses, we can expect some difference from the Universal behavior of light. Thus velocity, frequency, amplitude and direction might vary.

Furthermore, it is not inconceivable that bubbles of Nothing exist in our Universe, just as our Universe is a bubble in Nothing. Certain spots in our Universe appear to be not only vacant and void of all Substance; but not a gleaming body can be seen through these spots.

This is highly significant in that it may be possible for Space to be annihilated. In other words, the Field of Tension may be susceptible to such distortion as to result in Nothing. In this blind spot no material exists, nor will light pass through.

Once we have acquired a better knowledge of the nature of this Field of Tension, the possibilities of controlling our mode of living are unlimited. Traveling through Space will not be a matter of jet-propulsion or rockets. Such poor means will be outmoded for propulsion as an airfoil will be for sustained flight.

Space-suits will become a reality, and the movement of an entire city to another site, be it on Earth or any other suitable celestial body, will not be impossible. Indeed, the entire Earth might conceivably be nestled against the bosom of a more

fruitful, or a completely annihilating body, whichever the choice may be.

How to distort this Field of Tension certainly has not been investigated. Just how it might be done awaits considerable work. Although nuclear physics now has the stage, the time will soon come when most scientific effort will be devoted to the study of this Universal Field of Tension.

No doubt it will be found that distortion fundamentally will be electro-magnetic in character. Possibly this Field can be distorted by a tremendous surging of electrons. Possibly these electrons must be, at the same time, vibrating at some optimum frequency. In any event, the field of experiment is wide open and the possibilities are unlimited.

At the present moment scientists and military authorities are deeply concerned with the development of means for protection against atomic bombs carried in the heads of robot missiles. What greater protection could be had than the creation of a distorted Field of Tension which no missile could penetrate? This is not a foolish dream. With a full knowledge of the nature of this now little-known Universal Field of Tension, absolute protection against any material missile is feasible.

The path of scientific research beyond the atomic age is clearly before us even before the atomic age has attained maturity. And before long we will be learning more about a Force so long about us it has been taken too much for granted.

The End

THE SHAVERIAN HYPOTHESIS

By ROBERT PAUL KIDWELL

With this article we begin a pro-and-con discussion between Mr. Kidwell, who will take the opposition on the Shaver Mystery, and Mr. Shaver himself, who will take his personal share of the debate in following issues. Then Mr. Kidwell will return with his reply, and so on, until many moot questions are debated and settled. Your editor will act as kibitzer, inserting footnotes where he feels he'd like to stick in his oar.

MANY people have asked me what I thought of Richard S. Shaver and his "mystery." I have only this to say: either Mr. Shaver is an abnormally clever or perspective man.

If there is nothing to his stories but a fanciful adaption of fiction to Fortean data, it is still beneficial to anyone who reads and ponders it well, if not for teaching him to think for himself, then for the fiction and what one human brain can imagine.

If, on the other hand, Mr. Shaver's claims of underworld creatures devolved from superhuman men using dilapidated and depreciated mechanisms for their own detrimental pleasures and cruelty to others, we are indebted for the warning.

As for the possibility of the Shaver Mystery's being factual, I admit this much: it offers one (so far excellent) explanation for the occurrence of Fortean phenomena—that which cannot at present be explained in scientific terms and proved as possibly occurring.

Later on I shall attempt to discuss in order the possibilities of the various ray machines, Titanic existence, and the so-called thought-symbols. Aft-

erward I shall have a few questions I am going to submit to Mr. Shaver; his answers will be compared to my hypotheses concerning them.

This monograph will be sent to Mr. Shaver with a request that his permission be granted me to quote him on a few things and discuss his assertions and stories.

Mr. Shaver's theory boils down to this: he claims that, hidden by the earth and concealed by human pseudo-emotions, there are things and secrets undreamed of, whose omnipotence can compress the process of human evolution or re-evolution of centuries into a few short years. With this I—and every other person—whole-heartedly agree; we are aware of it each time we glance at a blade of grass, a bird, a piece of iron or glass, or mold.

If Mr. Shaver's theories are fictitious and his stories fiction, then anyone must admit this: they are entertaining and interesting to the *n/4* degree, and by creating the fantastic, he is unconsciously or purposefully preparing us to take correct action and avoid superstitious and paralyzing terror in the face of what cannot be normally explained.

If they are actually based upon little-known facts, Mr. Shaver is attempting to accelerate ex-

ploration, compilation of scientifically inexplicable phenomena, and to teach us that, by long-existing laws and creations, we will some day learn enough to raise us up the scale of evolution to that position to be occupied by our comparatively angelic successors.

It seems to be Mr. Shaver's contention that, as opposed to Darwin's theory, man evolved from some lower animal, mankind actually devolved from a god-like race who alone deserved the name of Man.

Is this so fantastic? Anyone who likes the thought of extraterrestrial chances for development being with billions against them would be surprised to learn, if he could see beyond his own subconsciously egotistical nose, that even then the possibilities of such development would reach astronomical figures; if we compare their possibilities for progress in centuries to our own, in the dim antiquity and probable millenia of universal existence we discover the chances of superterrestrial scientific development many times greater. Thus the science-fiction writer may be merely writing of the possibilities of occurrences which might even now be happening under some unthinkable distant sun or in some inconceivably vast, remote, and even undetectable galaxy.

I hope Mr. Shaver takes this as encouragement; I, for one, believe that the more theories we entertain (no matter how far-fetched) the better chance one of us may some day have of understanding his Creator. While he builds his stories on Fortean and scientifically ignored and neglected facts, he has hitherto remained completely consistent, save for a few obscure matters which I hope he will clear up now and, above all, give me the satisfaction that anything the human brain can conceive the human brain can either create or explain, even by ultra-science.

The Ray Mech

"QUEEN SHOLA led me into an adjoining apartment. Here the walls were a series of television screens on each of which a scene of struggle was taking place. On the center of each, some far distant ancient giant of a ray generator, topped by a Hoblok (dero), sent vast streams of energy toward the receiver. These were met and neutralized by great black shorter rays somewhere between. In the lower part of the screen could be seen the uniformed head and shoulders of a snail man, his peculiar webbed hands manipulating the defense mechanisms. At some of the rays were humans, also in uniform.

"This particular war is ten years old," said Queen Shola. "You see, the ancient rays were so quiet and situated that they could not successfully fight against each other so that no revolution could take place by their use. At the same time they are so strong and well-constructed that no weapon our weak modern minds can devise will subdue them. It is a premeditated dead-lock so designed by the ancient God-race. The Hohloks of course cannot

understand this and try to fight with them; and perforce we must fight back with the ancient stationary rays. It is all extremely stupid and repetitive, but so far we have not found the answer. We are defeated by the brilliance of the ancient minds which built and placed the ancient rays as a check on any attempt to dominate their life—"

In Shaver's stories evil little imps called deros consistently get hold of some incredibly ancient weapon and, like mischievous little children, begin to "play" with "flies." According to his claims, with those machines they can see through innumerable tons of impenetrable and impermeable rock, blast with devastating effect through the same and destroy metals an atomic bomb could not dent against raymen who could put mechanical and electronic computers to shame and rays which could prevent the force of an exploding atomic bomb from burning or exploding dynamite a few feet away, and race through super-Carlshad caverns in super-atomic-airplanes which can do anything but weave cloth—and use machines even for that.

Altogether this seems impossible to a fantastic degree, but this is not for conjectures; this is a discussion of them.

Let us examine the ways by which a person may be seen through tons of intervening earth.

The logical thing to do would be to find some frequency of electro-magnetic waves which would be visibly interrupted only by some substance peculiar to man-made or living matter.

Thus far the only shield of this sort advanced by Mr. Shaver has been mercury, which most certainly is not found in human or living tissue—at least in sufficient quantities to provide even translucence from transparency, and mercury is not a rare metal in the earth.

If such a ray were possible it should work, or operate, somewhat like this: the substance should be opaque to a beam of very high frequency of a reflector of a detector-originated search-light; in event of its being opaque the living organism should be seen as a pale shadow in the path of an approaching, natural beam; this substance within the organism would rob the frequency of sufficient energy to prevent its registry upon a sensitized screen. This is evidently not the way by which Mr. Shaver's little imps operate their telescopes. In case it were used as a reflector, the substance, or anything containing it, would merely act like a bright object in the path of an ordinary search-light—as seen via the screen.

What substance could we discover which would be peculiar to living organisms? Mercury? Heavens, no! None of the heavy, more resisting elements! Iron? Carbon? Hydrogen? Oxygen? Sulphur? Phosphorus? Nitrogen? Calcium? Aluminum? Magnesium? All are present within rocks. Life forces? Each and every part of them is duplicated by non-living, natural substances. Electricity? Always, where there is strain or water, far more electricity is produced than within living tissue. Motion? Even rocks shift, ever so slightly.

Sound? Light? Rocks interfere with them both.

Polarization? If you can arrange the alignment of ordinary atoms you might leave a path by which light could travel, but where would the polarizing beam stop? It would naturally penetrate humans also.

Besides, any physicist will tell you that light is interdependent of atoms, depending only upon molecular alignment for penetration. Any beam capable of forcing molecules to change about would theoretically possess sufficient energy to twist them apart. Of course, there is another possibility, but I should like to see if Mr. Shaver's theory agrees with mine.

Thus far, as for transvision, I say merely that its scientific handicaps are insurpassable to science as we know it now.

The theory I possess for solution of the aforementioned problem is linked quite miraculously with several of the ray weapons Mr. Shaver has also mentioned, but I shall discuss that at the end.

As for the raymen, everyone must admit that a few extra decades of existence could render possible such creatures.

Considering shorter rays, I believe I have a possible solution, but I would prefer to check with Mr. Shaver to test my own powers of reasoning more fully.

We must also admit the possibility that some day we shall have atomic airplanes; already we have robot planes that can do almost anything necessary to protect their passengers, and all that is needed for full exploitation of atomic energy is some shield efficient enough to prevent injury to humans.

The "teleaug," as Mr. Shaver calls it, is fascinating; with it you can amplify a person's thoughts until they can be read, or "heard." If you disbelieve in it, remember that already it has been discovered that the brain produces certain peculiar sets of waves, and those radiations have been detected and amplified sufficiently for recording; need I say more?

The Titans

WE are looking for a race in space—a group of a dozen heavy planets on the rims of Titan's space empire—whom the Titans mean to strike—to war on with these same (atomic) bombs.

Would it be impossible for human beings, were they possessed of these beneficent ray machines, to live forever—or for a much-extended length of time? If so, could it be that they would "Wax in stature and in mind, and in favor with God and man?" Could unlimited growth be impossible? Could it be that by application of a ray a person could be turned into a saint—or a devil? Does solar energy actually cause old age and mental degeneration? Is gravity caused by the condensation of some material dissolved in space and falling harmlessly but forcefully and irresistibly through everything on earth? Could it be that gravity plates can neutralize attraction or accelera-

tion? Is it possible in mid-interstellar space to overcome inertia and accelerate at a fantastic rate? Are there god-like races living eternally on dark planets upon which no day-star shines?

What causes age? We know that ancient denizens of the desert sometimes lived for many centuries. Could aging actually be the slow accumulation of poisons?

There are many substances which thus cause poisoning; if you drink water from a lead pipe or container you will eventually accumulate a sufficient amount to destroy your life.

It is known that radiation from unstable nuclei is quite wide-spread in minute quantities and that radium is accumulative; so are many other body substances which can easily be rendered radioactive; can it be that the sun which we consider to be the source of all life is actually poisoning our earth and slowly rendering it uninhabitable?

Something causes old age, and that something is not natural to living tissue—re Doctor Alexis Carel. It is evidently the slow accumulation of some widely prevalent poison which, after sixty or seventy years, becomes so evident that it endangers life. That something, to be so prevalent, would have to be carried by air, water, or sunlight.

There are few accumulatively dangerous substances in pure air, which still is not absent from the lives of some aging people; we seem to age quite as rapidly on mountain tops as on the sea.

Water may contain poisonous substances, and let us consider; desert dwellers do live quite unexpectedly long lives sometimes.

Would this not conflict with the hypothesis that aging is caused by solar rays? After all, the sun shines quite as much upon deserts as upon well watered lands.

It might be that water condenses the poisons, or retains them overlong; this could account for it if you considered the life-span of a desert-dweller to be the normal length of time for a sun-kissed race to live if it were not for further addition of poison by partaking of water.

Unfortunately it is not yet determined whether some water is not so poisonous, for desert dwellers normally are accustomed to drinking less water than ordinary people; of course, if you started feeding ordinary water in normal quantities to desert peoples, it might be possible to formulate a more definite theory.

By the hypothesis of solar poisoning, however, if that radioactivity is interfered with slightly, as in the dank, dark jungles of Africa, it might be that life would, or should, be extended at least a little.

At any rate, that poisoning must be caused by something unusual to fire, for animals basking in the rays of a fire have no detectably shorter life than wild, fire-fearing animals.

If this radioactivity is as we know it, men living in caves and heavily armored ships, tanks, and fortifications should have longer lives than usual; it is indeed unfortunate that they are gen-

erally cut short in serving the purpose for which they dwell in such things. As for caves, I fear we have too few inhabitants for examination for general information.

Can it be that this radiation we so fear is composed also of beneficial rays? Why would it be so impossible to believe that certain (and minor, I admit) frequencies emitted may prove not dangerous but beneficial to living organisms? To think otherwise would be, in my opinion, like gathering specimens of all the flora of a new land and eating them; if you were poisoned, would it be quite intelligent to assume all the herbs there to be poisonous?

It is a fact that, surrounding a particle of radioactive substance, there is immediately a circle of total destruction, in which nothing lives, an outer area in which plants seem to act as though richly fertilized, and, outside the influences of the rays, a normal botanical world. This would coincide also with his theory that extra-dense metals could stop the malignant but pass the beneficial radiation.

There might also be ways of removing malignant radiation from a machine and allowing the beneficial to fall harmlessly upon a person, and it is conceivable that after prolonged use the filters would themselves become radioactive enough to throw off the poisonous with the beneficial. The effects of radiation are not completely known as yet, but if accumulation of radioactivity is related to or the same as aging, we can expect many different mania and a general mental deterioration from elderly people—and those exposed to harmful radiation. There must be some good in radiation, for otherwise tissue would never have received a beneficial impulse to wake from its lethargy of death into life.

There is but one thing wrong with this part of Mr. Shaver's theory; I should like to know his solution before I venture mine.

GIANTS? Why not? Science, personified by Doctor von Koenigswald, has discovered remains of giant sub-humans—or were they lower than ourselves?

An amoeba has a certain limit, and its size is governed by its surface tension; an insect cannot attain a certain size, for its pulmonary system depends upon the Brownian Movement for ventilation, and such tiny vascular tubes could certainly not carry a conducting medium or air very far without tremendous and impossible pressures; even then a certain distance which is very small to us would be impossible and insurmountable to molecular motion; a man, and the higher animals, has the most efficient pulmonary system yet known; it can supply many tons of flesh with oxygen necessary for survival and relieve them of gaseous wastes. There could only be one more efficient system—that in which the air would be compressed in a strong pair of lungs, the compressed oxygen taken out chemically and the carbon dioxide ejected and expelled.

In the human lungs we find a pair which can contain a slight pressure, and the oxygen is taken out chemically while the carbon dioxide is injected osmotically.

The only difference between the human lungs and the most efficient thus far imaginable is the comparative inability of our pulmonary system to compress air for more efficient exploitation of oxygen; this could readily be overcome by a few generations under special conditions.

The larger the animal the more efficient its pulmonary system can be, and there is no reason whatsoever for the failure of a human being to mature fully before his onrushing doom, both in size, mentality, and morality.

Even his body could easily adapt itself until it can bear its own weight without ill-effects—if it is properly balanced and healthy.

If a beneficial ray be used, why could it not stimulate our cells and nerves? Remember that sunlight has some effect a little different; it seems to cause the living organism to drowse and relax; it is well known that inhabitants of the temperate zones are far more energetic than those of the torrid.

We know that insanity can be induced by application of certain stimuli; what is more reasonable than to suspect that, with all the insanity prevalent throughout the world, some frequency of light or other common electromagnetic manifestation can either cause insanity or render certain people more susceptible to it? And on the other hand, can it not be that there are other frequencies that augment the constructive flow of the mind—as music and pleasant colors, for instance—and improve one's morals and intelligence? They are directly related; the more intelligent a human being the higher his sense of morality, even as Mr. Shaver seems to say.

It has been scientifically determined that upon prolonged and intensive exposure to certain unrelieved colors and tones, especially those which are extremely dominating and monotonous, the human brain is subject to insanity, even as it is if subjected to various enigmata, optical illusions, and irregular succession of colors or lights in certain orders; it is also known that, on the other hand, subjecting unstable minds to other such stimuli, perhaps changed but little from the malignant, may cause them to regain their former clarity; with human sanity resting upon such precarious supports, is it not conceivable to suspect that these beneficial and malignant stimuli might be duplicated within the higher frequencies or even in nuclear radiation?

IN "A Warp in Space" I happened to mention a possibility that the Solar System was merely a warp in a dimensionless void; in this void there might be some solution which condenses and falls toward the center of the warp, eventually to form the meteors and planets. While it was (and is) my contention that the secret of gravitic attraction lies within the atom or atomic group, I was

suddenly, at the fourth reading, startled to discover how much it sounded like Mr. Shaver; looking back, I compared them and saw that, while I felt that the tertiary warp manifested an effect which was taken as gravity and the condensation of matter from interstellar space was but incidental, Mr. Shaver maintained that the fall of the condensed matter gave the effect of gravity; to substantiate my theory still further, perhaps unconsciously, of course, he admitted that this condensation "fell" toward the center of matter—hy some inexplicable law.

I have not the slightest means of differentiating between the consequential effects, so I do not venture to say he is wrong.

Would it be possible someday to neutralize gravity or acceleration? The difference lies openly between them, but the effects are the same; in "The Shortest Distance" I advanced a hypothesis which would reconcile them as manifestations of leaving, or entering, a warp. Just recently a scientific experiment made use of an alternating electro-magnet to suspend an aluminum plate of certain dimensions against the laws of gravity. Aluminum is an excellent conductor of electricity, but a poor transmitter of magnetic waves; such is the human body, so it is not only possible, but highly probable, that some day we shall discover a means of counteracting the force of gravity by electro-tension.

I did not realize until I began this portion of my monograph that my hypothesis have yet another thing in common with those of Mr. Shaver. In the last mentioned monograph I raised the question (unanswered at present) of whether there were any dimension or a total of all dimensions outside the solar warps. If there were a combination of all possible dimensions any excursion outside this warp might end up in a prehistoric or ultra-civilized earth, since we might find ourselves also hurtling through something which we call time; but if there is no dimension to space you would instantly find yourself wherever you desired to go (even in another galaxy) providing you did not fall into another warp.

If you combine our assertions you will find something like this: since there would be no dimension in interstellar space (hypothetically), you would instantly acquire without ill-effects any velocity you desired; so long as you cleverly and expertly maneuvered your ship in mid-interstellar space you would be in no danger, but neither I nor anyone else whom I know, could tell you what might happen if you struck a solar warp without proper deceleration; quite possibly you could, as Mr. Shaver suggests, be instantly affected by an inconceivable force of deceleration.

According to Mr. Shaver inertia does not exist in interstellar space; I contend that it is possible that dimension does not exist; in that case inertia would still be the same as we know it, but falling also through a higher dimension and give, to us, evidence that it has somehow changed; proof one way or the other would come if we discovered

light or passage to be instantaneous between solar warps, or whether there was merely no effect from acceleration. Some reasons make me prefer my own hypothesis.

HOW about the Nor-gods he speaks of? Do they actually exist far from the effects of solar radiation?

Men go mad beneath the sun, sometimes blind, sometimes even cancerous, and the sun is at fault. So far as we know, however, once you take advantage of adequate precautions you are in little danger from it.

If the sun is directly to blame and if solar rays are detrimental, why do people more often go blind on snowfields than in the tropics? Why are there many similar effects on aging in impossible places? Science is unalterably precise, accurate, and correct; if our hypotheses do not fit the conditions, or if one such theoretically impossible situation should occur, they become pseudo-science and are no longer worthy to be called a scientific law.

We know that certain wavelengths are completely harmless—even beneficial as far as we can tell, and what is constructive cannot be destructive; besides, even recluses who seldom leave their dark houses grow old even as we.

Thus it boils down to invisible light being the cause of such effects. Ultra-violet and infra-red can be ruled out; though they can burn and even kill with sufficient concentration, they are neither accumulative nor penetrative enough to fit all circumstances.

The only accumulative frequencies which fit every condition under which aging has been noticed to have advanced inexorably are those which can penetrate thick walls.

No doctor will admit that X-rays are the cause, for they are exposed to them quite regularly, and even overdoses will but cause flesh to become merely leprous—not wrinkled with age—and decay as the fingers of Mr. Shaver's "ro"hots.

Radioactivity and high-energy rays seem to be the only remaining ones. Radioactivity is admitted to be widely prevalent and, so far as we know, always accompanies the release of atomic energy.

Cosmic rays are another possibility, but they seem to come from interstellar space.*

In conclusion of this portion, let me say that I have a question concerning this to ask Mr. Shaver and that, if his stories are true, cosmic radiation cannot be the detrimental cause of old age, for it is highly penetrating and, at present, has no known shield; the Nor-gods should be as flooded with them as we with radioactivity, for only miles of rock can screen them from such radiation, and even then radioactivity results wherever they strike.

**This has recently been subjected to severe doubt with the discovery of intensified cosmic rays deep in the earth.—Ed.*

Thought Symbols

"HER flower-fragile face with its two great eyes bends diligently over one of the tremendous metal foil books of the Elder race; she is puzzling over the difficult symbols (symbols it would take me—Shaver—paragraphs to describe the packed meaning of one of them, as they used a multi-complex symbol since vanished from human thought):"

Now we come to the cleverest part of Mr. Shaver's hypotheses—the simplified language and complicated thought symbols of the ancient ones.

Since the dawn of co-ordinative civilization men have sought a common language; hundreds have been "scientifically" devised, but all have come too short of their goal.

From obscurity we discover a single thought—that in the dim past men possessed the intelligence to understand thought and mental images well enough to reduce them to a short series of common denominators—the alphabet; yet this alphabet in itself was a group of basic symbols whose various combinations would reveal the most complicated of human thoughts.

I myself disagree with the reasoning used by Mr. Shaver to designate certain meanings to his alphabet, and, with his kind permission, I may write a later monograph concerning possible alternative meanings, but at present it is none of my business; if it be fiction, Mr. Shaver alone has the right to designate the equivalents; if it be fact, who am I (are we) to protest the intelligence of a race whose genius was sufficient to compound it?

My only admissions of the possibility of using this as proof that ancient ones actually did exist is that, in my opinion also, all thought can be reduced to a few basic symbols upon whose combination only depends what you think and that Mr. Shaver is marvelously consistent in its use and extraordinary combination into modern English words. Personally I hope that this simple but awe-inspiring discovery, or hypothesis, came only from Mr. Shaver's brains; the human race, in my opinion, will do far better to work out its own destiny without such terrible inventions as he portrays for us; I think that the atomic bomb is enough confronting us, let alone those nightmarish instruments of destruction he has conjured up for us.

There are but three things wrong, as I can see; the first is in supposing that the spoken word would be understood by modern man; it would be extraordinary if the English tongue were perfectly regressing—or reprogressing—to the ancient one, as witness the changes since Chaucer; the second is in use of words which are quite obviously of comparatively recent and occasionally invented origin, and the third in the use of letters which were needed only for increasing complexity of our spoken and written language, such as "J" and "Y"—even "W."*

universal alphabet expressing thought, then all of your arguments against Shaver's alphabet are invalid. First, supposing that the spoken word would be understood by modern man: It is Shaver's contention that the alphabet is phonetic, purely so. Thus, the sound of a letter, its makeup of sound waves in atmosphere, or any other competent carrying medium, IS the letter, and the instant mental reaction to it should be understanding. But what kind of understanding? Here is a mystery which intrudes itself as the real secret behind language. Why is it that in all languages, certain letters always appear in words meaning much the same thing? The letter R, for instance, as previously pointed out by Mr. Shaver, occurs so incredibly often in words which carry a connotation of horror. D appears in words carrying the meaning of death or destruction. T appears in words which signify an integration or growth. Thus it must be that a universal language can only remain universal if there are CONTROLS. Why is it that we build a new toy with which we can construct machines for children and call it "mechano"? Shaver's word mech intact. As we write this, a "meaning" for that word occurs to us that strikes our humor—mechano: me see-human animal, no? We might construe that to mean "I am a human who sees (understands) machines." However, too many of our readers indulge in this sort of game and get far off the track. Actually, many of our words can be broken down in this way. Shaver would break down the word mechano like this: mech animal seed source. Well, now, doesn't that describe a mechano set for children! This toy is the seed source for the animal's machine knowledge. Humans are always referred to as animals, it seems, when spoken of by the master language. English does not regress, neither does it progress. It is a matter of sheer invention every day. The only wonderment about that is how amazingly apt the most recently coined words are. This cannot be an accident. Is there really a language control? Is it in the basic construction of the human mind? After all, concerning the letters J, Y and W, your editor has never been presented with acceptable proof that they were introduced recently, or reinstated recently. After all, the German "jung" is not pronounced as English would have it, but as "yung." Phonetically, both the J and Y might be confused. The Japanese has many more letters, all of them pronounced. Maybe our 26-letter alphabet is far from complete. A W is just a double U. So they say. But is it? In order to study a language based in something before the birth of this planet, we must discard the books that have been written on language, and approach the study with a completely blank mind. It is with such an approach that the amazing fact becomes evident—that there is no fabrication. Try it, without those red-herring books to throw you off the track at every turn. Your editor tried it on the thousand odd carved stones found in Mexico, containing glyphs only partly translated today. The result was astound-

*If we grant but one point, that there IS a

ing. If, somehow, the phonetics of these glyphs could be achieved, the most sensational advance could be made through Shaver's alphabet. The main point of your editor's argument, is that you cannot argue the Alphabet on the basis of Chaucer, or modern semantics. Take just the two letters T and D and go to work. If you can attribute your results to pure chance, you have upset the entire appellation of science, because then the law of probability is just pure chance. You would be saying nothing is probable, but everything exists anyway.—Ed.

To me, however, consideration of the use of a single alphabet to portray, in any language, any thought you might desire to convey is particularly fascinating; as I stated before I believe the choice of meanings for those letters might have been a little better, and some day I may write a monograph on the use of such symbols for such a purpose—a symbolically linguistic alphabet, and the more I consider the more I become confident that all human thought can be broken down into such a few basic symbols, and that it is the logical way to record multi-linguistically.

At any rate, may I congratulate Mr. Shaver on his fascinating presentation of an excitingly possible explanation for many of the extraordinary phenomena and coincidences which alternately seem to plague, bless, and bewilder our lives?

Mr. Shaver, I have some theories about some of the following: I should like to know if yours agree with mine while yet unknown to you. Would you kindly consent by answering the following questions?

1. How can you obtain a ray which can detect a human being or one of his inventions when each element and form of energy within his body is duplicated by natural, inert, unchanged rock?

2. How could such a ray be kept secret from a human target? How could it be kept from harming him, or how could it harm him?

3. How could your shorter rays operate scientifically?

4. If the air is clogged with radioactivity, why

does it not affect people whom you call the "Tero of the Caverns"?

5. If, in these caverns, food is prepared by machines, with nothing going in except water, transmutation is obviously at work. How could the resultant radioactivity be removed from it for comparative safety? If there is some simple means of transmutation without creating malignant radiation, about how does it work?

6. If the Nor-gods exist in blackest space, how can they escape the burns of cosmic rays? They are as dangerous as malignant nuclear radiation, and my hypotheses seem to indicate—along with many others better substantiated—that in spatial tension the high velocities of sub-atomic particles could well create them even in deepest and blackest space.

7. You have made two irrelevant statements which can be connected: if, as you say, age is caused by radioactivity and malignant radiation removed from transmuted foods, why did not the ancients use similar apparatus for removing it from themselves? You stated this was possible only by use of the teleport but later admitted this marvelous machine—or its use as I refer—to be but a figment of your imagination, at least in the sense in which you stated it was used.

8. How could a teleport work?

9. Is a space ship possible? How could it work?

10. And not too important save for checking, if the Titans were so intellectually superior to ourselves, why did they find developing something as comparatively simple as the atomic bomb beyond their powers of reasoning? Or was it merely to make a story?

11. How can beneficial radiation be differentiated from malignant?

Mr. Shaver has seen none of my answers, and any answer he may give will, of necessity, be totally unaffected by me save if you like to think they were monitored by mental telepathy.

As a last favor, Mr. Shaver, would you like to give us an idea of what your thought symbols look like?

(Read Mr. Shaver's reply next month.)

CAN A MAN BECOME INVISIBLE?

By JAMES T. BENSON

IN 1934 a young British inventor shocked the countryside with the claim that he could make a man invisible although he stands before you in the flesh. An apparatus was housed in a cabinet which was open in the front and elaborate precautions were taken to keep its operation a secret.

The man who is to disappear is clothed in a strange looking suit referred to as a "spectral mantle." His head was covered with what was called an "electro-helmet." This garb made him somewhat resemble a deep sea diver. He stands in the cabinet on a well lighted stage. When all is ready the man touches contact gloves above his

head with both hands and an electric current is turned on. Gradually the current is increased and as it does so the man takes on a transparent look. Then, starting from the feet and going up, the man completely disappears. It is claimed the subject is tangible and yet completely invisible. To prove this, observers are asked to verify the man's presence by touching him. All report that they can touch him and are unable to see him.

Several attempts were made to learn the secret of the device. One of these was the taking of photographs showing successive stages of the demonstration. However, these revealed only what the human eye saw.

MEDIEVAL ILLICIT

By
RICHARD S. SHAVER

**We present the following article without comment.
Your own thoughts on this should point it up!**

ACCORDING to my information, there is a government of sorts in space around us (in the banned, quarantined area), a government made up of men and women not truly immortal but possessed of means to greatly prolong life even under the conditions of our planets.

These cannot leave this area of space to return to the clean spaces beyond, where life is much better, they are exiles from their former state, as our legendary Satan was supposed to be. They are also the sons of sons of exiles—and they have a government.

There are several groups of divergently opinioned individuals powerful in this strictly local space-state. Some of these are comparatively benevolent toward the comparatively short-lived mortals, ourselves.

Others, notably Venus and Mars, are dominated by families who grew up under medieval traditions, and they live on those planets (the common people live) in the same type of conditions and mean servitude that prevailed in Europe in the Dark Ages.

This is not a chance, but a design for life promoted by these groups, and in the larger spheres of this space-state—it is called "The Medieval Illicit."

It is this imperial, egotistic, utterly sadistic and cruel organization, of members espousing the desirability of Medieval conditions of life for the "aristocrats," who are today sabotaging our national life, as well as causing the general pattern of destruction swiftly overcoming all the brash green idealistic productions of our machine age. They plan to return Earth to the conditions of life they are accustomed to upon Venus as well as upon Mars—or so it is reported.

Naturally, to have the best possible set-up for a "Medieval Illicit" pattern of life, a large portion of us surface dwellers must be removed from life. This is being accomplished as fast as possible, though they seem somewhat discouraged by the birth-rate replacing the losses so continuously.

They want a forested landscape, dotted at respectable distances with Medieval towers and battlements, surrounded by a slavish populace not too numerous, yet numerous enough to provide a bountiful supply of victims for the Gilles De Rais (bluebeard) type of orgy they prefer as a constant of their life.

License for aristocrats would then be the law of life. Witchcraft and its Sabbath, superstition and ignorance in the common man, would then permit open and unsecret use of the mechanisms of the Elder race which they base their power upon.

Fantastic as this "Medieval Illicit" way of life seems to us who are used to the "modern" way of life, it is desirable to them, and powerful forces are at work to bring about a world-wide debacle which will plunge us quickly again into the darkness of those times.

They have no modern minds, they are not interested in science or its development—science is an enemy they fear as it will in time produce implements and weapons which will neutralize and destroy their superior powers inherited from the past. They are not human as we know it—but another thing.

Fighting this movement upon Earth, (dominated by aliens brought up mainly on Venus where such conditions prevail and which they paint as the most desirable way of life) are native rays led by other aliens from planets vastly different from our own, but modern in their intentions toward the common surface man of Earth. They want him smart and healthy and able and growing, and they do not want him and his "modern" machine art destroyed. They have a use for him in their design of life.

They have behind them the tremendous power and wealth of a far-off space organization to whom the "Medieval Illicit" movement is just as "illicit" and horrible as to us. They are handicapped by the vast distances and time between their base of power and Earth, while the "Illicits" use Earth and Venus as their base for piracy upon the ships and people of the true space government. Their ships cannot land openly here, because the hidden pirates would destroy them. They do maintain contact with their Earth followers, a contact hampered and broken by the furious activity of the Venus-Earth-Mars outfit to cut off and destroy the last vestiges of this decent force.

This M.I. outfit contends that it holds these three planets against all comers, and knocks off every space ship that unwittingly wanders into view, as well as making regular forays against the space lanes far outside our solar system. The real truth of how big they are, or how far they

travel, is pretty hard to come by. It is like asking the Russian government for a look at their secret records.

The truth that is ascertainable as such is that there is a bunch having space ships who do occasionally raid other peoples having space ships, and who do not allow any space ship to visit Earth and get away again.

Just how big or strong their opposition may be is also hard to learn because of tampering in communication as well as the difficulty in distinguishing lies from actual attempts to make Earth people aware of the true state of affairs.

The ascertainable truth is that there is an opposition to the M.I. outfit, who do get around them and land space ships and leave again—who do recruit and train surface men of Earth, and who do not espouse the Medieval Illicit plan for the future.

It corresponds roughly to spies and diplomats of Russia and U.S.A. arguing and working undercover to rule Greece, or free Greece, depending on which side your sympathy is.

Both Russian and United States operatives have more potential power than Grecian officials, yet ostensibly they are only visitors in Greece.

The fate of Earth in the future is bound up in the success or failure of the opposition to M.I. in the underworld.

In "Cult of the Witch-Queen" and in "Masked World" I tried to give you a picture of the underworld as I knew it. These angles of space powers and politics and life-patterns I did not include, but I did try to give you a picture of how bad it could be by showing what the Hag-men did to Venusian native cities.

Just such an impossibly grotesque evil life may overtake Earth in the future.

In the caverns, there are places where such completely evil organizations as the fictional "Cult Queen" and the Limping Hag's immortals do exist and plan for power.

Just how logical or sane or able they may be to take over large surface territories, is another question. Sometimes one thinks they could not fry an egg properly, such ludicrously inept activities they indulge in.

But that they have immense power for evil is true, for the good ones are unable to take control fully and cause the sabotage to cease.

If the atom wars begin, I will see it as the climax of the Medieval Illicit groups to set the stage for a kind of life they are fitted to dominate.

Again the "legends" of Bluebeard and his kind will be told by the hearths, while the horses of the "aristos" ride past toward the castle on the mountain. Again the witches will have their followings of slavish worshippers, the were-wolf haunt the forest, and the "beautiful" Duchess torture the handsome peasant while the Lord looks on.

Again the magic of science will be confined to the tower of the castle, the exclusive property of the over-lord.

Again the right of primo-geniture will blight the marriage of every poor man.

The court of the Sun-king will glitter, while the sores of the peasant fester and disease multiply.

Again the shrieking victims will travel openly down the long trails to Hell, the underworld they then will know exists.

For Evil is alive on Earth, and it is strong. And it has little to do with mystic night-gowns or spiritual worship or any other insubstantial excuse for wisdom. Evil is pragmatic and not superstitious.

Moreover, it knows there is an underworld and it has traffic there.

The atom bomb is not a joke. But what lies behind is even more terrible of face.

It seems to me that the only hope for good is for the cavern ray who do espouse good to come out in the open on the surface and make a real effort to unify men against the Medieval Illicit type of organization.

If you exist, White, why do you wait with the atom bomb war every day closer?

Or are you all truly mad and impotent and wrapped in pleasure to the exclusion of all human affairs? Is that conclusion inescapable as the future use of the atom bomb is inescapable? I spit upon you, then.

Again and again, as I sift all these tales and attempts to explain the peculiar conditions of life and motivations of the great among the cavern people, I come to that unescapable conclusion: they are not worth spitting upon.

They are a mad, pleasure-bent lot, who have never accomplished one useful thing, and the only reasonable beings among them are guards and slaves and other unimportant unofficial and lowly people of clean stock.

The secrecy they insist upon is as much a shameful covering of their inherited deficiencies as it is a shameful covering up of their inherited prerogatives of great pleasure and huge harems.

... is as much a covering up of their pitiful madness as it is a conscious monopoly of wonderful legacy from the past.

That they have and use space ships and kill others who come here from space is very probable and I have seen enough to know it must be true. But that it is a sane, logical proceeding toward an end of value in acquisition of power—is not true.

They are mad, below, and the atom bomb comes for all of us of the surface. Let us hope that when it does, their cities of imbecilic wallowing in worn-out pleasures will collapse upon their heads.

The Swastika and the Were-wolf have come to mean the same thing. There is a reason why the Nazis chose the Were-wolf for the sign of their undercover surface organization. The reason is as I have explained—the wish for Medieval conditions on the surface.

They wear Medieval styles, affect Medieval customs, hate modern freedoms for common man.

Few as they are, unequal as we know our modern society to be—it is yet too good for us in their eyes.

They are alien, out of a past once alive on Earth, still alive in all its horror on neighboring planets—they say.

In any case, they are entirely alien to any concept of Utopian equality and opportunity for the man of common birth.

The pattern of destruction sweeping Earth bases in the plans of these Imperialists—whatever name you call them; it is not had enough for what they are doing to man.

That this movement should end in the holocaust of the atom war and triumph for them is unthinkable—but apparently inevitable!

They will not die in that holocaust. Modern science and medicine will—and they have no use for either.

You say they do not exist. I say they are mad, and that the secrecy that hides them is a product of their madness.

If all the evidence of their existence that is spread across the face of Earth and our newspapers and statistics does not apprise you of their existence—it may be that they are right, and that

a people so blundering, blind and ignorant do not need to be considered in plans for the future of life on Earth.

It may be that we, modern men, are even more insane in our blind adherence to a taught view of life given us by . . . Them!

It may be that those who survive the atom war will be called by future historians a singular sample of the survival of the fittest . . . an endorsement of the theory of life which produced the "survival of the fittest" law.

Those will survive who are deep enough in Earth to survive the shocks of such explosions—and who had sense enough to get down there before it came. Those will also survive who engineered the war, and knew exactly when the bombs would fly and where they would land.

A great many generals and diplomats and munitioneers still die in bed.

Those will survive who were so proud they refused to take part in the struggle of the "beasts" on the surface. Who were too lazy to get out of their stim hed and help us.

But will anything at all survive on the surface of earth? Who knows?

THE END

TOO SUBTLE FOR ME



By



LINUS HOGENMILLER

WITH all this talk about atomic fission going around, nobody seems to have noticed its secondary effect, which is, the production of intense cold weather.

Nobody, that is, except one scientist who had part in its creation—and I forget his name. Back in 1946, at the time of the Bikini experiments, he announced that cooler weather would immediately follow these experiments, and sure enough, it did. The temperature in this country, far removed from the scene of the explosions, dropped 40° in one day, and only gradually, through a period of two weeks or more, rose back to summertime normal.

The same thing has happened in 1947. We have the authority of Father Bernard Hubbard, the Arctic explorer, and several others, to the effect that a Russian settlement of extensive proportions—behind "the iron curtain"—devoted to the release of atomic energy, blew up. Not a word from the Russians concerning this. But immediately following the weather turned terribly cool (hail falling in Missouri in the middle of July), and remained thus for two months in the heart of summer, only then returning to true summer heat (30°-40° warmer).

Frankly, my interest in atomic research is nil, but I have on hand an old prophet who serves me

in time of need, and they called him Nostradamus. On the inception of atomic power he has this to say:

Fire, the color of gold from the heaven the earth separates;

Struck by the higher born, an occurrence of wonderful concern

The huge murder of people, with the great Nephew (Philippines) captured,

A Panorama of Desolation the haughty person (Hirohito) escapes.

Now this is living history, and I urge anyone to do their own translating of Nostradamus, inasmuch as the casual translator is usually not too reliable. But to go on (in history):

The earth and air will freeze with so much water. Then shall hail fall bigger than an egg.

Hail and thunder shall do inestimable harm at Condon.

Rains, frosts shall make the ground unrighteous. Of Marsaves frosts, then hail and north wind, Dordonois frozen by the error of Mezan.

Not to mention floods, extending even to the capsizing of England and the covering of France and Italy. But my point of interest is, What if the world should grow cooler, through the expenditure of atomic energy? Last winter the English nearly froze to death.

TWO-WAY STRETCH AT LIGHT-SPEED

By H. C. GOBLE

ONE of the biggest difficulties in grasping the theories of advanced physics is that the average mind is trained to think in Euclidean geometric concepts and to use a system of Arabic numerals limiting the seeker after knowledge to a group of fixed factors. A mind trained in this way is up against a terrific problem when trying to grasp infinite concepts or visualize a series of points extended until they become a line.

To aid the fundamental problem of fourth-dimensional thinking, I have rigged up a little device (theoretically) which should demonstrate almost at a glance what one must contend with in entering the nearly uncharted realm of light speed and speeds beyond.

We start with a vacuum tube at each end of which is an electromagnet. In the tube between the magnets is placed lengthwise an iron section of pipe, hollow in the middle and free to move in the tube.

Each electromagnet is operated by a circuit breaker in the form of an inductance pattern on a steel wire (our friend the wire-recorder). On each wire the make-and-break pattern for alternately opening and closing the circuit is built up by re-recording to tremendously small sections. This can easily be done by hooking up two wire-recorders directly, without a microphone or speaker circuit, and playing back and recording a primary sound first placed on one of the reels, at two different reel-speeds.

The circuit for each electromagnet is activated by its own wire, and the patterns on these wires are so timed that the circuit-closing impulse of one wire occurs during a blank space on the other wire . . . or to be more specific as one electromagnet begins to lose its current the other electromagnet begins to take on current in the same ratio. The piece of pipe between the magnets is therefore vibrated back and forth in the same fashion as the clapper on an electric door-bell . . . except that the recorder make-and-break pattern can be built up to tremendous heights. The metal tube is in a vacuum to minimize the effects of air friction which would burn it up far short of any desired experimental goal. Actually our top limit of vibration would be reached only when the wire patterns became too small to be implanted on the wire by the recording electromagnet.

Now let us speed up the vibration of the tube and see what happens. At about half light speed, if you could get a fast enough stroboscope you would see that the tube was only half as long as when at rest. If you had carefully inserted a twelve inch ruler in steel tube before you started it, you would note that the ruler would now say twelve inches, just as before . . . but if you held another ruler outside the tube, you would see

that the ruler in motion was only six inches long in reference to your fixed position ruler. This would be subject however to an odd variation, which could be observed. As the steel tube with its ruler in it reached each end of its course, it would come to a dead halt for a tiny fraction of a second before it was pulled in the other direction by the magnet at the far end of the tube. In other words it would decelerate from 93,000 miles per second to 0 and back to 93,000 miles per second and back to zero again, all in a nearly infinitesimal space of time. You would see then that the rule measured its normal dimension when at the ends of the glass tube, and contracted to only 6 inches in the middle of the course where the steel-tube attained half light speed. That is the so-called Lorenz-Fitzgerald Contraction Theory, which certifies that a body shortens in the direction of motion as it proceeds toward the speed of light.

So let's keep speeding up and see what happens. By this time a stroboscope will not be needed for observing your iron tube, for your continuity of vision will make the little tube stretch continuously from one magnet to the other apparently without motion though it is actually vibrating between acceleration peaks which are near the speed of light.

The surprising thing is that when the tube is actually vibrating at the speed of light, a miracle would occur, and you would not only see the steel tube as a long continuous tube . . . but it would be. Why? Because . . . and this is granting that light speed is tops in the Universe . . . when the tube reached that speed (a little over to allow for deceleration) . . . there would be no time interval between the instant it left one magnet and moved toward the other. That is, *ONE* steel tube would be occupying simultaneously not only end positions A and B, but every position between them . . . which is where Euclidean geometry falls down in describing such situations. But by the Lorenz-Fitzgerald Contraction Theory, when the tube reached light speed it would have no fore and aft dimension at all . . . it would occupy no three-dimensional space from front to rear. All during the long hard pull up to light speed the tube has been contracting in length. So now it reaches a point where it is occupying a line of motion at all points simultaneously, with a physical being which has no existence along this line of motion at all. Thus it seems to resolve into a question of how many layers of nothing it will take to fill up infinity.

However we have one slight boon. If the tube moves at light speed at its peak, it must drop to zero speed at each end of its run. So each time it drops below light speed it becomes subject to

normal laws of time and space for a tiny billionth of a second. As far as Lorenz and Fitzgerald are concerned it would become a thin three dimensional disk at the instant it dropped below light speed . . . taking on a normal spatial dimension as it were. But as far as Einstein is concerned, time elapsed in transit would still be such a minus quantity in the deal that the tube would be a continuous solid occupying all points on the line of motion at the same time. To accommodate both parties it is best to picture our tube as a series of barely visible segments edge to edge, stretching between points A and B . . . though Lorenz-Fitzgerald would not allow their continuity and Einstein would not allow the segmentation.

Now let us visualize the vacuum tube made man-size with an airlock. Naturally we will have to enter with a type of space-suit containing its own air supply. When we have got our man sized steel tube vibrating at light speed over a course of, say, fifteen feet in length, we will enter the glass tube.

We will see nothing except a steel conduit, seemingly suspended in mid-air without motion. We walk to the rim of it. It seems solid as a rock, and when we lay our hand on it, it appears to be motionless to the touch also. Gingerly we clamber up inside the tube, and instantly find ourselves in horrible shape. We are suddenly extended for the full fifteen-foot length of the tube. If we face at right angles to the tube we are fifteen feet wide, if we face the far end of the tube we are fifteen feet from front to back. And yet there is no pain, no sense of motion and no wrenching. The only real discomfort is when we face at right angles to the tube, our eyes occupy the entire length of the tube simultaneously, and worse than that are on top of each other an infinite number of times in hyper-space. Three dimensional vision is impossible this way.

TO SOMEONE who could watch us from a fixed position we would appear to be a series of fifteen-foot lines . . . a line for the top of the head, a line for the eyes, the nose, the mouth, etc. . . . superimposed on a solid wall which was the bulk of our body. The outsider could not see that we also are on top of ourselves an infinite number of times, for we have negated space and time. The steel tube, and us along with it, are occupying every point at the same time, and are also "reoccupying" the space we have traversed before . . . since there is no interval between the time we leave A, reach B and return again to A. But now we observe something that fills us with horror. Let us say that when we entered the tube we were looking straight down its fifteen-foot length. Our eyes would be visible to an observer looking into the far end of the tube. Then we turned at right angles to the tube and found ourselves extended sideways. But horrors! Our first extension stayed with us . . . for by

destroying the time interval between points in space, we created an extension that was a true solid . . . a duplication of ourselves. This awful excrescence turned at right angles when we did . . . and was again extended in the direction of motion. So now we are a square from Delaware, fifteen by fifteen, with undoubtedly the largest squarest head in the Universe.

We have become something worth a million dollars in a side-show, and we are going to have a time squeezing through the airlock door. Why didn't we leave well enough alone, and just dump some gold or uranium into the tube to be extended. Neither shutting off power to the magnets, nor getting back to terra firma will help now . . . for the extension is permanent.

We finally break loose by knocking a hole in the side of the glass tube, and strip off our fifteen by fifteen space-suit. We walk down the street, though this is a bit awkward since both legs are one solid piece, and there is no longer a convenient division between them. Our fifteen foot frontal stops traffic and pushes people off the streets. They are slightly disturbed at seeing us, for our eyes are merely two strips . . . on adjoining sides of the square.

Eating is a terrific problem. The three-dimensional area of your stomach is 225 feet or thereabout, your mouth stretches completely along two sides of you, and totals a little less than thirty feet in length . . . and worst of all, you are not only feeding this visible three-dimensional monster, but an infinite multiple of him . . . the overlapping selves occupying the same space as you . . . and each self getting just as hungry as you alone did before this awful thing happened.

Lorenz and Fitzgerald would disclaim your hunger . . . since you are merely a series of zeros added up to equal something, and as such are immaterial. However you will have infinite mass which is material and consequently hungry. Eventually you will realize that the only convenient way to get enough to eat is to take a normal meal and put it in the vibrator, and turn it around till it reaches the same relative size as you. You will become accustomed to porter-house steaks as big as a living room rug, hot dogs like barrage balloons, and coffee-cups like swimming pools. You will have a few other minor matters to worry you, like the galactic barrage which will fall on your head . . . after all your mass is infinite at light speed, and consequently your attraction will be too. You will pull everything down around your ears, including every star and planet that is subject to the phenomena of this space-frame. You probably will drill a hole into the earth's core with your feet also, for you are infinitely heavy.

So if you have any urge to be the intrepid experimenter who first reaches and crosses light speed . . . take along plenty of first aid equipment.

THE END

COMING NEXT MONTH: "PROMETHEUS II" By S. J. BYRNE

DISCUSSIONS



AMAZING STORIES will publish in each issue a selection of letters from readers. Everybody is welcome to contribute. Bouquets and brickbats will have an equal chance. Inter-reader correspondence and controversy will be encouraged through this department. Get in with the gang and have your say.

Address Your Letters to:

AMAZING STORIES "DISCUSSIONS," ZIFF-DAVIS PUBLISHING CO.
185 North Wabash Avenue, Chicago 1, Illinois

YES, WE REMEMBER!

Sirs:

Enclosed is a newspaper clipping, just one of many items showing up of like nature. Thumb nail sketches.

Remember the article "Circle-Winged Plane" as printed by you in AMAZING STORIES MAGAZINE, September, 1946, page 157? You have desired facts and confirmation. Now, re-read that article, again, please.

The planes seen at Joliet, Ill., Kansas City, Oklahoma, Seattle, etc., were not the same group of planes but other groups of the same type, all on a world-wide "mapping expedition."

They are only a few of the many belonging to a world government consisting of all of the oppressed peoples and dominated nations of the earth, of all colors, races, and creeds.

This government is directed and advised by an organization headed by "The Ancient Three, Who were, Who are, Who will be." They, who at one time over a year ago, sent a message to you by way of us. Their headquarters is "Rainbow City", Antarctica.

Permission is given to print this letter, if desired.

W. C. Hefferlin
Ray-Dox Mfg. Co.
Livingston, Mont.

We print your letter because it is interesting. We don't know if it is true, naturally. We do know, however, that the "flying saucers" are no mirage. As for Rainbow City, if it's what you say it is, we'd sure like to pay it a visit! That sort of thing, which is the Utopia all science fiction writers have dreamed about, is just not visible anywhere in the civilized world. If it exists at the south pole, near that warm spot Byrd found, and it has what you intimate, we'll be waiting for the saucers to come back and bring peace to this nasty-minded old planet. Only we wonder how it could be done—peace doesn't come by force. Perhaps the only way it will ever be done is to wipe the slate clean, and just start off as veritable cave-men, shocked to sanity by utter destruction. In

that case, maybe the "last" war is our "last" hope? A peculiar viewpoint, but it has amazing logic. We never met the man who could learn how a kick in the pants feels without getting a kick in the pants. As for the saucers, maybe you're shooting in the dark—because your editor knows what he's talking about there! But even if you are, we'll forgive you, because your motives are so obviously of the good kind. Thank you for your letter. It wasn't really necessary. Our readers have not forgotten your article—and how they wrote us about it!—Ed.

SUPPORT FOR HEFFERLIN

Sirs:

I would like to make a slight correction in your "The Editor Interrupts" letter in the Discussions Department of AMAZING STORIES for October, 1947, in regard to Mr. W. C. Hefferlin. I have a copy of his valuable manuscripts regarding the finding of the seven ancient cities in the Antarctic Region, six of which are buried under thousands of feet of ice, but the seventh, because of an ancient temperature regulating machine, is fully exposed.

Nowhere in his manuscripts, or in his letters to our group, does he mention the cities, or the caverns under the cities being "inhabited by a super civilization" in the caves there, a la Richard Shaver's teros. He does say, and I quote: "It is quite evident by the careful preparations as found that this land and cities were deliberately left for future generations of the human race's return some day, although it is doubtful that this was to be a million or so years later."

Also from a recent letter I again quote: "The latest report received by us from our associate (Saturday night, May 31, 1947) gives a total population of several thousand people in the valley containing the "Rainbow City." We have well over a thousand men, women and children now living permanently at "Rainbow City." The balance are temporary representatives from the continents of Asia, Africa, South and Central America, as well as a few from North America,

and are of all races of mankind." But nary a tero.

It seems a pity that the readers of AMAZING STORIES have not had the opportunity of reading these wonderful articles. We often wonder why?

Jessie R. Fuller
1040 Leavenworth St.
San Francisco, Calif.

What we'd like to have, along with those articles, is some photos. Boy, what a sensation that would be! And there you have your answer. If Hefferlin's Rainbow City really exists, and actual proof would cause a great fuss, that's why you haven't read the articles. We could present them, but we'd have to admit they were pure fiction insofar as we knew. To say anything else would be impossible. Even the Shaver Mystery isn't like that—we can PROVE the Shaver Mystery, and you'll get that proof in the next three months! As for Rainbow City, can you imagine what any Earth government would do, if they believed it existed? What about that super-science that's supposed to exist there. I can see Russian (and American) expeditions, intent on capture, racing for the pole. What a mad world this is! We, ourselves, however, would like to see a Rainbow City delegate at the UN.—Ed.

HOW THE TRUTH IS COMING OUT!

Sirs:

This may be a bit late to write about "So Shall Ye Reap"—but it's such a shockingly logical thing that I've read it twice. Once for the story and once for the science-probability aspect of the theory. Then a couple of days ago I found an item in the local paper about a "\$10,000,000 super-secret project under construction on the mesa a dozen miles east of Albuquerque" (N. M.).

"Military sources termed fantastic some portion of a copyrighted story by the Denver Post which said the armed forces are building huge caverns for the atomic war defenses."

Also, "The base is closely restricted. That means no visitors. Townsfolk say the workmen are carefully screened and are employed on too small a portion of the construction to be able to give clues as to its final nature." (I have not enclosed the clipping because I want to save it.)

The point is: Is Rog Phillips, the scientist, right in maintaining that the chain-contamination of the air, due to atomic explosions, has already begun and is already recognized? Is Mr. Phillips the Johnny Davis of "So Shall Ye Reap"—trying to warn humanity of its ultimate end? Is the theory set forth in the chilling story a glimpse of what could happen or is it a full picture of what he knows has happened already? Recent news items seem to prove that he is at least on the right track.

Incidentally, has anyone noticed the unusual size, number and variety of insects this year? My

husband and I have seen bugs this summer that neither of us has ever seen before—and most of them bite. Only yesterday I found a huge black and yellow spider which I have never seen before outside of the tropics (I have in mind Mr. Phillips' mention of huge roaches.)

And now for the Shaver Mystery, which is proving itself to some extent every day. About two years ago I read a book "Anything Can Happen" by George and Helen Papashvily. In the story—an autobiography—Mr. Papashvily tells of finding a cave (when he was a boy in Georgia—not the state but the province) which contained several skeletons of giants with heads as big as bushel baskets. Recently, I wrote to Mrs. Papashvily and asked if this were true. She sent me a very kind answer, saying that the story is true, that nearly 2,000 people have written to ask about it, and that they have received unsolicited corroboration from two men who have seen similar things in the Caucasus area of Russia. Also, she says, she recently saw an article in the New York Times about archaeological findings of "an extremely large race" in the area.

Since Mrs. Papashvily seemed puzzled at the widespread interest in giants and caves, I wrote to her again and introduced her to the Shaver Mystery.

By the way, I have learned that the Georgian language is one of the few tongues that seems unrelated to any other, and is relatively pure. If any one is still experimenting with Mantong and knows Georgian an application might be interesting. I would also like to know how Mantong applies to the Welsh and Gaelic—two more mystery languages.

In conclusion, I would like to request any clippings any "Shaverites" have to offer. I have a fairly complete collection dealing with mysterious accidents, explosions, catastrophic fires, sadistic crimes (particularly those where the criminal is labeled insane or as having a "split personality") and also items about scientific, archaeological or geological findings which seem to pertain to the Titan Cavern theory, research, or miscellaneous phenomena. Anything at all that may tend to prove or disprove any part of the Shaver Mystery, or Rog Phillips' conception of results of atomic explosion.

Oh, yes, I must put in a "plug" for the Shaver Mystery Club magazine. It's a grand little magazine, beautiful, informative, and easily worth 50 cents. It's really a collector's item. Has anyone mentioned the illustrations by Shaver himself? Weird, beautiful, and reminiscent of the Persian art.

Mrs. Nancy Weston
R. F. D. No. 1
Peru, Illinois

It is amazing, isn't it, how true Rog Phillips story seems now, with the actual work going on that he envisaged in his story. As for the truth

of his atomic concepts, we're horribly afraid he's right there, too, and we're trying desperately to prove it to ourselves. If it is true, we are going to disagree with Phillips' story in one way—we wouldn't keep the secret.

However, there is one thing new that gives us hope—the recent discovery that we are naturally more radioactive than the bomb itself! Maybe nature has prepared the human race for the atomic age, rather than death for us, she has planned a new race, a natural mutant, not a freak mutation. We have determined with absolute surety, that the effects of the atom bomb at Hiroshima caused mutants, sterility, extreme fertility, and little or no disease and wasting death. So, it depends on what degree of radiation you are exposed to.

Yes, we've also noticed the geraniums going to seed, and we assure you any botanist will tell you things about that. As for the bugs, etc., we have many confirming reports.

We seem on the verge of being able to prove Shaver's ancient giants from many sources lately. We are waiting for the California group to produce their cavern giants and their relics and machines and museum, recently announced as being discovered, but not yet exposed to public view.—Ed.

BOOKS FOR SALE

Sirs:

Would you please print this in "Discussions?"

I have, for sale, the following books. "King Solomon's Mines" by H. Rider Haggard, "War of the Worlds" by H. G. Wells, "The Purple Cloud" by M. P. Shiel, "The Legions of Space" by Jack Williamson. These books are all in good condition.

Richard A McLellan
2924 North 58th St.
Omaha 4, Nebraska

THE CHMBS REPORT ON ANOTHER CAVE

Sirs:

If you file your correspondence, you will find a letter there from this writer which was written in the early part of this year, advising you of reading my first AMAZING STORIES magazine and of my instant interest in the mystery of the caves, especially the articles by Mr. Shaver. I haven't missed a copy of A. S. since then and interest in the mystery of the caves has grown until you may class me as an unofficial member of the CHMBS. In fact, the purpose of this letter is to inform you of a recent expedition to one of the caves for an investigation.

For you and those interested in the "air shaft" near Burley, Idaho, reported by Mr. George Haycock, whose letter was published in the October issue of AMAZING STORIES, this is to verify the truth of this cave.

M/Sgt. Brentlinger (a Shaver fan), stationed at Hill Field, Utah, and myself made a trip to Burley over the weekend of the 17th of August to ascertain the authenticity of both Mr. Haycock and the cave. We had no trouble locating this gentleman and after explaining the purpose of our mission he quite readily agreed to show us to the cave and to guide us through, providing it was still possible to enter. The entrance had been blasted since he was last in the cave, he explained.

We drove about six miles west of town, then turned off the highway onto a little road leading through the desert sagebrush. Oddly enough, this road was well worn and seemed to be much used although there is no apparent reason for so much traffic. We failed to see any other cars either on the way in or out.

Even though he had been to the cave many times and to the entrance as recently as three days prior to this trip, Mr. Haycock, strangely, had difficulty in locating the spot and we stopped twice to look before we finally found it about a mile from the highway.

The entrance was located in the center of a shallow circular depression. The surrounding terrain was nothing but sand and sagebrush but jammed in around the opening were several large boulders. We found there was still a small hole running down through the boulders and Mr. Haycock thought it still possible for us to make entrance. With some violent maneuvering we did manage to squeeze through and we followed Mr. Haycock to the floor of the cavern. Then, crawling, kneeling and sometimes walking, we were led back through the cave for approximately one-quarter of a mile.

The cavern is cut through what appears to be lava rock. Walls and ceiling are badly fallen-in in many places but there is enough intact yet to give the general appearance that the cave was at one time square. In certain spots the walls and ceiling are perfectly flat. Then, too, we noticed one small chamber to one side of the main passage that is square-cut except for one end which is cupped out.

There are numerous small passages leading off to the side of the main path, which Mr. Haycock said led to dead-ends, in the ones he has explored.

After seeing enough to convince us of the truth of Mr. Haycock's story, it was decided to turn back and not to continue inward to the impassable obstruction Mr. Haycock mentioned in his letter. To have gone that far more equipment would have been required. We had nothing but two flashlights, both being used continuously. Where we turned back is approximately half-way to the obstruction.

We failed to hear or feel the icy wind that is said to blow from the shaft most of the time. However, Mr. Haycock explained that it did become quiet occasionally, as we found it that day.

At present another trip is planned to the cave.

This time there will be seven or eight of us and we plan to take the proper equipment and enough provisions to do some serious work at clearing away the obstruction. It is desired by all to learn what, if anything, might lie further on beyond this obstruction. But, if there is nothing but more cave it will at least be an interesting adventure that will be enjoyed and remembered by all!

Now for the information on two other caves this writer knows of which might merit investigation. The first is in the Smoky mountains of North Carolina in the Nantahale(?) Gorge. It is called "The Blowing Springs" and is easily reached from the highway. The cave has an icy blast of air and a cold stream flowing from it continuously, from which it got its name. It is not known by the writer whether anyone has ever entered the cave or if this be possible, but there are many that have been to the entrance to look in.

The second is called "The Devil's Well" and is located in the "Hole-In-Ground" near Pine City, Washington. The cave is very round and approximately five feet in diameter. People are known to be afraid to enter this cave due to the rumor that it is a rattlesnake den. It would be interesting to learn if there is any truth to the rattlesnakes and why it was named "The Devil's Well," and by whom!

Frank W. Haigler
Box 18, Apr F-22
Sahara Valley, Utah

Thank you for your report. This will prove that caves reported to us do get investigated. Eventually all of them will receive attention. So you readers who make reports, be careful you aren't hoaxing. You'll be embarrassed when the CHMBS call on you!—Ed.

MYSTERIOUS WORDS

Sirs:

In all good faith I believe the words which are written on the separate sheet enclosed herewith tie in somehow with some phase of the Shaver (sub-head Margaret Rogers) Mystery, and because of this conviction I am very anxious that you should be given the complete story of the origin of these sentences, with a suggestion as to a course of investigation in connection with them.

Discounting the time spent in typing, it would be much easier for me to furnish you with all of the details at this writing, but for certain reasons (part of the story) which you will understand, I should rather take my story to you personally.

There is an obstacle in the way of our meeting, and that is that I belong to the rather big group of clock punchers, and it follows that while you are in your office, I am at my work and cannot get away.

Perhaps there is a possibility that you can set

aside a few minutes after working hours, either at your office or elsewhere. If so, I can keep any appointment downtown after five-thirty, any day of the week.

There is more to my enclosure than at first meets the eye, and so far as my presentation of it is concerned, I am not building up a hoax, nor is anyone involving me in one. My sense of humor is normal and does not extend to finding an outlet in meaningless mischief. I mention this because I'm sure you have had to put up with a legion of cranks during the past year or so.

If you are interested, let me have the time to give you my story, and it might develop that what follows will have some value. Just set any time convenient to you after five-thirty, but as to the day, give me a margin of a few days, so that I can beg off on any overtime work (rare) which might come up, and which I usually know about a day or two in advance.

If you cannot spare the time, I will have to write what I could tell you in ten minutes. Writing will not only take me much longer, but if I make the same headway with it as I have in past attempts, I will finish somewhere in 2047 A.D. Your description of the difficulties you and your staff experienced in getting out the Shaver resume issue is not without meaning to me.

Esti Tamil caj mages.
Ser tia banji.
Calme do mentes.
Mentes mean tarli.
Do carmi so trejan.
Stes to maj coronorvi.
Do mensa pesil tremi va gero.
Egri te medu savir do pordan.
Prandes heme eglu nestre.
Cordeve rendimu esten seri ban tor.

Note: These sentences, whatever else they might be, are not gibberish, nor have they been consciously or deliberately fabricated.

Harry L. Oberg
5454 S. Union Ave.
% DeBorde
Chicago 9, Ill.

Thank you for your letter. We will contact you and arrange a meeting between us.—Ed.

WE DISAGREE, OF COURSE!

Sirs:

What in the name of heaven prompted you to put out a good magazine? I refer, of course, to the August issue with its magnificent story by Rog Phillips. I'll be generous and admit that the previous one was half way decent too.

After that hideous monstrosity you put out with Shaver as your one only, I thought all was lost. If that guy has to creep in, why can't you put his stories on an attached booklet that can be torn off, and filed in the waste basket? A more practical and, by the way, quite serious suggestion is

that you put him in *Fantastic Stories* exclusively. Or am I wrong in presuming that *Amazing Stories* is supposed to be strictly scientification?

You certainly lead the field in artists. (What do you know! Another bone from Bauer!) But some time ago, your stories fell flat on their faces. These last two issues were like fresh air in a tomb. (I delicately ignore the fact that Shaver squeezed his clamy material into the rear section of the latest mag.)

If Rog Phillips can do it again, let's have more of him. "So Shall Ye Reap" is terrific!

One more thing I'd like to add. To my dear friends who thrive on Shaver, and who will no doubt cut my throat verbally, I draw my trusty forty-four and make the following comment: BANG, BANG, BANG.

Russell A. Bauer
522 No. 19th Street
Milwaukee 3, Wis.

We say Amazing Stories is the best scientification magazine in America. No other magazine will make that statement! As for scientification, what's your definition for it? If it appears in Amazing Stories, it's a science fiction story. If it appears in Amazing Stories, it's an AMAZING story. That's what Amazing Stories is, AMAZING STORIES! And there are a lot of amazing stories floating around, some of which aren't about mad professors on Mars. We always knew we led the field in artists. And our Shaver issue wasn't a hideous monstrosity, it was GREAT. All of our issues are great. We even think you are great for thinking our latest issues were magnificent, terrific!—Ed.

CAN ANY READER HELP HIM?

Sirs:

After years of reading your *AMAZING STORIES* Magazine I believe it's time to send my deepest gratitude for years of enchanting entertainment.

Your great story in the August issue "So Shall Ye Reap" was superb and, in all probability, I believe this could actually happen, although, I could hardly be called a "Brain" on such matters, but I do hope that you print more stories like them.

I wonder if you could do a lifelong reader a small favor. I'm pretty interested in optics and telescopes, especially the Refraction Type, but it seems I can't find any material in the libraries here to help me; such as, construction and the type of lenses used.

I really don't make very much money, so I couldn't possibly afford to buy those new books that cost around \$10.00 a shot.

So if you know of any readers who have such information, and are willing to pass it on to me, it will indeed be greatly appreciated, and if so desired the information will be sent back to the owner, at no expense to him.

Hoping to hear from you very soon, I remain one of your best *AMAZING STORIES* fans.

Edward F. Kroll
711 Harrison Street
Kansas City, Mo.

No doubt many of our readers are amateur telescope makers, and we publish your request for information so that they can contact you. Any of you readers prepared to help Mr. Kroll out?—Ed.

THE WIRBELROHR

Sirs:

Allow me to congratulate you for putting the finest of magazines on the market today.

The reason I am writing is because I have come up against a problem, and since your magazine started me on that problem, I have hope that it may also solve it.

There is, apparently, a discrepancy in your article on Dr. Hilsch's "Wirbelrohr," by Anthony B. Ott. In describing the physical shape of the tube, Mr. Ott speaks of the diaphragm at one end, and of the other end being throttled. I built a vortex tube, following Mr. Ott's description, and the accompanying diagram as closely as I could, so far as the relative proportions are concerned. My model didn't work, even though the air pressure I applied varied from a few pounds up to approximately one hundred pounds.

The article states definitely that the tube is very inefficient in small sizes. My model measured four inches in diameter at the greatest. Was I expecting too much from such a small apparatus? Actually, I could detect no change whatever, in the temperature of the air escaping from the throttled end of the tube, while from the diaphragm end of the tube there simply came no air. My tube was crude, my methods of trial were crude, but still refined enough to have produced some trace of temperature change.

I am not a scientist of any type whatever, so any help that comes my way would be greatly appreciated.

You may add my name to your undoubtedly enormous list of those interested, and willing to help in the search for the truth behind the "Shaver Mystery." I, for one, am firmly convinced that if Mr. Shaver is not telling the truth in his stories of the caves it is only because he is under the control of a dero ray, and therefore unable to tell the truth.

May I say in closing, that "So Shall Ye Reap," by Rog Phillips, rivals the great masterpiece of Stanley G. Weinbaum for sheer gripping entertainment, and equals the logic of Mr. Shaver.

Willard S. Poe
6552 Nokomis Ave.
Cincinnati 33, Ohio

Remove the baffles from the inside of the tube and try again! Our original diagram, since corrected, was in error. You must have missed the issue with the correction in it.—Ed.

CLIPPINGS

Sirs:

Just a short note to tell you I enjoy your magazine a great deal. (Have for about 10 years.) Rog Phillips' "So Shall Ye Reap" in the August issue is one of the best. I enjoy the Shaver stories no end. Keep up the good work.

I've just come across a couple of interesting articles in the local paper. They may or may not mean anything but I'm enclosing them for what they are worth. You may want to add them to your files.

R. L. Meehan
619 3rd St., S. W.
Puyallup, Wash.

Thank you for your clippings. We have received hundreds and they have been very helpful. Along those lines, we'd appreciate it if any reader who sees something unusual in his newspaper will clip the item and send it to us; we'll be very grateful. Much goes on today that is forgotten the day after it happens, and many good leads are not explored. If brought to our attention, we may be able to track them down.—Ed.

FLYING SAUCER WITNESS

Sirs:

I have just finished reading the October issue of AMAZING STORIES, in which you ask for "flying saucer" information.

Here is what I know: On June 28, 1947, at 3:43 P. M. my brother saw the flying saucers—about seven to ten of them—which flew directly over our house. He said they went like "blue blazes"—didn't make any noise and were heading approximately south (Rockfield, where my brother's farm is, is just 16 miles northwest of Milwaukee). But what is really strange is that same afternoon the discs were seen over Illinois (they must have been the same ones). This information was given on June 29th—Sunday—over WGN—"The Latest News" at 8 to 8:15 A. M. with Charles Sebastin. He reported that the discs had been sighted over Illinois the preceding afternoon.

Perhaps the information is valueless to you. At any rate please keep this confidential. Our neighbors think we're slightly "queer" to have seen the discs. (I didn't see them but I believe my brother.)

I have been following the Shaver stories and I hope you have many more of them.

Marion Beuscher
Menomonee Falls, Wisc.

The flying saucers are real, and you can be sure of that! Let your neighbors think what they will, in a few months you will be able to prove how good your brother's eyesight is! Thanks for your report, and we hope many more readers send them in. Rough drawings would also be helpful.—Ed.

GOLDEN GLOBE CONFIRMED

Sirs:

I've been reading your magazine for over three years and have been half convinced and half skeptical of Shaver. Story or lie, or what have you.

But at last I see a letter on page 173 about a large yellow globe, supposedly a space ship. I saw the same thing, about the same time, but as I was just a kid at the time folks told me it was a dream and I was just about convinced.

I lived at Lake Quinault on the Olympic Peninsula in Western Washington from 1912 to 1916, so the exact date is about half way between. One summer evening after a hard day in haying I fell asleep on the porch; about 11:30 I heard a sound like a strong wind and it woke me up. The moon had been full and about midway of the sky when I went to sleep but was down when I woke up. What I saw was, I thought, the moon falling back toward the east and a little north. It couldn't have been over 600 feet up. I was so convinced that the moon had fallen that I was awfully surprised to see it again the next night. But this is the first time it ever occurred to me that it could have been a space ship. Then again I saw something that must have been a space ship about January 1947. One night as I was trying to go to sleep I was looking out the window at a star that I think was Venus. Something bright left and went out toward the west for about a half minute and returned. I was rather excited about it and stayed awake most of the night looking for it again, but I haven't seen it again. I couldn't think of anything else it could have been.

If you want to print any part of this O. K. but don't print my name or address.

To help you understand the moon falling incident, I was about 12 years old then.

(Address withheld)

Thank you for your letter. Your report is in agreement with many others we have. Watch the pages of AMAZING STORIES for proof of this strange craft you saw. As for the object you seemed to see leaving Venus, we are inclined to say that it was an optical illusion—but at the same time, noted astronomers have seen such phenomena and have had no explanation. So, maybe you were right. Charles Fort would have nodded sagely at your report.—Ed.

MYSTERY GAS

Sirs:

Enclosed find a newspaper clipping à la Shaver Mystery. The "Mystery Gas" was a local happening which I can verify as I saw this gas myself. I followed other newspapers, like the Daily News, Daily Mirror, and the N. Y. Times for several days after the strange and mysterious occurrence

happened, but none carried the story about it; only the local newspaper clipping, from the Long Island Daily Press.

The newspaper clipping blames the "Mystery Gas" to the burning of a dump in the Bronx. Now I know that this could not be the cause, for no odor, nor even smoke, could ever carry this far. And in the more than thirty years that I have lived here, I have never, never once, smelled a Bronx dump burning. Even with a strong wind, it could never carry this far. And my home must be some 10 to 15 miles from the Bronx. The day this strange occurrence happened was a beautiful, warm day for that time of the year, with the sun shining bright all the day. At first, the "Mystery Gas" smelled like gas (coal gas) from a defective furnace. So strong was the odor that I went down to the basement to see if coal gas was coming from the furnace, or whether there was a gas leak someplace in the basement. Then I looked out the back window and could see what at first I took to be heavy smoke all around the neighborhood to the west. It came from a westerly direction. I noticed that the smoke (as I thought it was at first) was heavy and thick several blocks away from the house. I thought there was a fire in that section but when I didn't hear any fire engines I thought it was peculiar and strange. Fifteen minutes, about, after I had first smelled the gas, I went to the open back window, and this time took a good whiff of it. Then I got it, it smelled exactly as if someone was burning rags. It did have the odor of burning rags—not a gas. I also noticed that the smoke (gas, or whatever it was) was generally heavy, thick and cloying on the blocks where lines of trees were. It seemed to be thickest and to gather heaviest wherever clumps and masses of trees were. I took particular notice and, strangely enough, the gas suddenly ended at the block in back of our house. It must have been very thinned out when it reached our house and I first smelled the odor in the house; and to reiterate which at first I thought was coal gas. I know that the "Mystery Gas" ended up at the block in back of ours, for I checked up on this first hand. Our house faces east. I went to the front porch and looked out. I looked carefully to the east, the north and south. The air was perfectly clear. There wasn't even a trace of smoke, gas, or of the fog which was coming in heavy from the west. Even as far as two blocks away, looking out from my front porch, I couldn't discern a perceptible trace of the gas, or the smoke. It had come to a halt within a block of the house, and by the time it reached the house it had thinned out so that it was unnoticeable to the eye, though its odor was very strong. The newspaper calls it a "gas"; it looked to me like a mist, or a light fog, which I finally took it for. Though I thought it was peculiar for a mist, or a fog, to make an appearance in the middle of the afternoon, on a warm and sunny spring day. As to my personal opinion on the "Mystery Gas",

I would say that it was a mist, or a fog, which had the odor of burning rags.

I have given all the facts which I have deemed necessary. Perhaps another Queen's (Long Island) resident could offer you other information on this strange and mysterious occurrence out east here. I will soon send in a number of newspaper clippings on the mysterious flying discs which have been suddenly making an appearance in the skies over Idaho and Northwestern states.

Christian M. Keller
9618 Digby Place
Ozone Park 17, L. I.
New York

Have you heard of the round holes burned in a cement sidewalk very mysteriously in broad daylight? No visible agency, and yet it happened. Well, there are many things like that happening, and yours is just another one.—Ed.

CAVE CONFIRMED

Sirs:

Since I have been an interested reader of *AMAZING STORIES* since my high school days (1929) when A-S was a bigger magazine, I feel like one of the family when I read the letters in the discussion pages. The temptation has arisen many times to write a letter to you concerning some hotly discussed matter, but something has always prevented me from getting at it. However, the October Issue pushed me too far, and here goes.

The mysterious cave Mr. E. Stanton Brown spoke of in his letter is not exactly news to me. In 1938 a party of six of my friends and myself spent seven months in that area of Texas, and upper Mexico. We were testing an electronic instrument that we had developed, and needed lots of space and some mineral deposits for the various tests. So, we got rather well acquainted with the Big Bend country, and the Figure 2 Ranch, north of there. We arrived there in January and camped in the Sierra Blancas, storing a lot of our equipment at the town of Van Horn. By March we had gotten deep into the rugged country and as I recall, it was about the middle of March we stumbled onto this cave (or a twin) that Mr. Brown speaks of in his letter. Everyone was so dumfounded by it that we spent the better part of the rest of the month in making a thorough investigation. We penetrated the shaft to a distance of 870 feet and at about 650 feet found some very finely executed writing on the right wall at eye level, in what resembles cuneiform. At 800 feet one of the party fell over a cloth lying in the dust, and upon closer examination, it was found to be part of a blue shirt, of fairly recent manufacture; indicating that someone else had been this far in recent times. This and an empty pint whisky bottle dated 1897 was all we located to indicate recent occupation. Of course in a country where desperadoes such as Black

Jack, Billy the Kid, etc., hid out where they could and the more solitary the better, such a find was not too surprising.

At about 780 feet the floor dips more sharply downward and at near 900 feet progress is very hazardous due to moisture and increased slant downward. We carried rocks from the opening, and rolled them from the point where we could no longer walk, but they simply faded out with a rumble after a few seconds. We tried rolling flaming yucca stumps to see if, perhaps, we might determine more about the bore further on, but this proved to be futile, since the stumps burned poorly at best, probably due to bad air. It was very stuffy and hot after the first 300 feet from the opening. We held a powwow to try and figure out how we could go further down, but the only thing would have been lots of lariat ropes, or a long steel cable, and neither was available nearer than some 50 miles.

If Mr. Finley had taken the time to go hunting up in the Figure 2 Ranch territory he might have run across another, and to me more interesting, cave than the Big Bend one. About 62 miles from the town of Van Horn you go through the salt-flat country, where the Salt Wars of the old west occurred. Westward, some 8 or 9 miles from the road is the Apache Canyon country, and as rugged as anywhere on the face of the globe. In an off-shoot of Apache Canyon to the south, is an almost impassable gash called Hell Canyon. The walls of this canyon rise precipitously for at least 1000 feet and top out on Apache Peak on one side and an old Indian ceremonial ground on the other side. More desolate country would be hard to imagine. Coyotes and mountain lions are plentiful, and panthers no novelty. I have seen as many as 34 deer in a herd down below on a grassy ledge sloping down toward the canyon floor. Of course, further up toward the box end of the canyon it was much too rugged for deer, but a few mountain sheep are seen, in the wildest part of the canyon that the other cave was found, in fact we almost fell into it. The high grass about the opening held the disbed out entrance.

We were at an elevation of approximately 7000 feet and going was tough, especially with a pack, and we had stopped to rest when one of the party remarked that it "sounded hollow" when any of us talked. Of course, we all yapped away at the same time trying to see if this was so, and sure enough it was. Further investigation located the hole some six feet to the left of where we had stopped. It was roughly oval in shape, some 30 by 18 feet; and bridged in the center the short way by a natural rock arch heavy enough to support an elephant. In the center of the arch were 3 deep grooves caused we hazarded, by rope passing over the arch. We spent several hours in investigating the surrounding terrain to see if there might be any other entrance to the cave, but found none. It sloped sharply from the opening down to about 200 feet, and then the bore dis-

appeared, curving upward. We succeeded in getting down to the first level, by tying all our ropes together, and subsequently investigated a lot of it.

Threading through the soil were long stringers of quartz, but oddly enough at the same time there were chunks of rock as big as a piano that were solid masses of seashells. Quite a lot of pottery both broken and whole, was found. The most interesting thing was, however, that the further we went the colder it got. Also there was a sound of either rushing wind or water, which got louder the lower we went. We came upon two human skeletons not over 500 feet from the entrance, but they must have been very old, as the bones crumbled at a touch. Everything was covered with a deep dust after passing the bend and no indication of any living thing having passed there was ever noted. It was very dark and depressing, and the chill was very penetrating. When you consider that the outside temperatures was near 100 degrees, you can imagine how we were dressed. We had three flashlights, one a five cell, and after a while it was all that was left that would give a decent light. Down at what we estimated as 1200 feet from the opening we came smack up against a smooth stone wall. That was it. The end. None of us would admit it was natural, it was too smooth and perfect, and look as we would we could not find a single flaw or crack in it. It was of a marble-like texture and some eight or nine feet high in the center and around eleven wide. By placing our ears to the rock surface the roaring on the other side became much louder, and the rock was quite cold to the touch. There is natural marble near there, in Marble Canyon, where marble was once taken out in large quantities, and so the rock was native rock, I'm sure. Since the remaining light was all we had except matches, we voted to get back to the opening as soon as possible, and after a hard struggle upgrade we got back to daylight and held a conference. We decided to bed down and talk it over further the next day, as it was getting late.

However, the next day we were inclined to look foolishly at each other and claim it was all our imagination thinking there was anything strange on the other side of the barrier, and it was just another one of those many caves in the country. Carlsbad is just 65 miles north of there, and the whole country is no doubt honeycombed underneath.

We finished our experiments and left, late in July but I have never been able to forget the caves, and the odd sounds on the other side of that barrier. Or for that matter, the barrier itself, for it was, too perfect to be natural, I believe. Or, maybe I've just read too many AMAZING STORIES, and am inclined to wild ideas. As the Mexicans say, Quien sabe?

Some day I'm going to write you a ding-how Scientifiction on something-or-other, and then place it and my rejection notice among my souvenirs. Maybe then I can go on reading AMAZ-

ING STORIES in peace, without wanting to dash off a dinger.

K. A. Gookin
Carmel Radio & Sound Service
Box 1865,
Carmel, Calif.

We, too, wish we knew what was on the other side of that marble wall! As for the locality, we've heard a great many sensational stories of what the army is finding in Carlsbad Caverns. You know, tourists are no longer allowed to visit that cave, according to a newspaper story recently published, which caused something of a sensation.
—Ed.

MORE FLYING DISCS

Sirs:

I bought the October issue of AMAZING STORIES about a week ago, but for some reason or other, I haven't had the time read it until this morning. I noticed in the "Observatory" your article about the flying discs, asking for information about them.

Until the 8th of this month, I was driving a bus for the Des Moines, Springfield and Southern Routes, 312 2nd Street, Des Moines, Iowa. I was discharged on this date due to the fact that the traffic manager and myself could not get along together.

But to get along with my story. On June 29, 1947 I left Des Moines, Iowa at 1:30 P.M. on my regular schedule, bound for Mason City, Iowa, a distance of 165 miles. I had been reading the "Flying Saucers" tales in the newspapers, but I had been scoffing at them. When I was about 7 miles out of Clarion, Iowa there was an object shot across the sky in front of me at a roughly estimated height of 1200 feet. This object was rather large and was followed by four more. And as I am one of these fellows that has to find out what it is going on when anything happens, I stopped the bus and got out. When I stepped out of the bus, which was facing east, I noticed some dots in the sky coming from the opposite direction from which the first five went, which was roughly south by southeast. In this group there were 13 objects flying in a single file. These were about the height as the first and as near as I know at a speed of about 300 m.p.h. These were, roughly, between a circle and an oval, in shape. In appearance they looked like an inverted saucer flying through the air. At the thickest part they were, I would say about 12 feet thick. And as for the diameter they could have been anywhere from 175 to 250 feet. And they were a "dirty" white in color. These disappeared into the N.N.W. sky in a matter of a couple of minutes. They made a noise when they went over head like an electric motor or dynamo. I saw the discs at about 4:45 P. M.

Editor, I'm not one of those fellows who can be impressed by what the public says, and I am not subject to attacks of nerves, nor does my imagina-

tion ever run away with me. When I see anything it is really there. And I saw the discs. As for what they were or where they came from, I am completely in the dark. But I will say "they are not native to the planet earth". Or such is my belief.

I have been interested in Science-fiction and facts concerning the stars ever since I could read. The first I ever read was "Buck Rogers" of the comic strip. Then a fellow who ran a newsstand gave me a bundle of science fiction with the covers torn off. I guess this was about 1936. I was about nine years old then. I am 21 now. So you can see how long I've been reading it.

I've always been interested in interplanetary travel. Hope, some day, I can do some myself.

Richard Shaver and I see eye to eye on these stories he has written. I know of some things that have happened, similar to what happened to him. If you would be interested get in touch with me, and I'll be glad to write them to you—confidential, cause whenever I think of one of them, there is a deadly coldness settles in my mind. I've never told anyone about them cause they'd think I was stark, raving mad. In fact, it scares me. So if it will help matters any, for God's sake, let me tell them. Every time I think of this one deal, it seems if there is something takes hold of my brain and begins to squeeze. And until I start to think about something else, I am in agony. If you want my experience, please let me know.

How about a lot more interplanetary stories in AMAZING STORIES. Keep up the good work. Hoping to hear from you soon, I am.

Dale Bays
Box 12
Crocker, Mo.

Of course we'd like you to tell us anything you care to—and we won't laugh at it. We know better. Thanks for your report on saucers. You presented the case precisely and correctly. You will be hearing more about the saucers shortly.
—Ed.

RADIATION IN OUR ATMOSPHERE

Sirs:

I have waited until now to discuss Rog Phillips' novel "So Shall Ye Reap" because I wished to make some observations upon the reaction of nucleons on cosmic radiation in regards to atmospheric and also subatmospheric conditions.

As I understand it the nucleons taking the place of alpha particles in our atmosphere would cause the heavyside layer to lose much of its impedance against the mutational cosmic rays. Likewise the gamma radiations would also cause changes in the hereditary patterns of the genes of living organisms. As you know long exposure to X-Rays will cause sterility. X-Rays are very low frequency as compared to cosmic and gamma radiations, therefore it is evident that there must be

(Continued on page 172)



ARE the tales of strange human powers false? Can the mysterious feats performed by the mystics of the Orient be explained away as only illusions? Is there an intangible bond with the universe beyond which draws mankind on? Does a mighty Cosmic intelligence from the reaches of space ebb and flow through the deep recesses of the mind, forming a river of wisdom which can carry men and women to the heights of personal achievement?

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DISCUSSIONS

(Continued from page 170)

some effect on cellular evolution. Due to these facts I believe that if the condition spoke of in Mr. Phillips' novel were to happen would necessarily be an increase of mutants and as the hereditary patterns changed there would also be a resistance against the death-dealing properties of these radiations incorporated in the cellular structure. It could also become possible that man and other organisms would evolve to such a state that their nutritional necessities would include these radiations. Cosmic rays have always been thought of as evolutionary rays so it is quite possible that a form of life would also mutate from the gamma vulnerable type to the gamma invulnerable.

This of course is just theorem, unproved as the novel is likewise. Still there may be the likelihood that one of our theories may be proved truth. I sincerely hope and pray that it may never be so.

Thanking you for your courtesy and hoping to have another issue devoted entirely to the Shaver Mystery, I remain

Rafael J. Cardena
P. O. Box 3223, Sta. C
Philadelphia, Pa.

Many scientific minds are investigating this same thing today, and the results may prove to be quite uncomfortable. We suggest you connect up your work with the weather reports, and consult charts on average weather. The results will surprise you. Perhaps your theory is not too far off.—Ed.

SEVEN QUESTIONS

Sirs:

I have been an ardent admirer of your magazine for many years. Though until now I have not summoned up enough courage to write you.

I have questions, many questions, on many subjects.

1. Is the story of Elena's Tomh really true?
2. Are the "Flying Discs" really space ships?
3. Is the radioactivity from the atomic bombs which have so far exploded really spreading over the world?
4. If the King of the World the Karma mentioned by Nostradamus in the book *Nostradamus on Hitler, Napoleon and the Present Crises* or is it that man somewhere in Arabia who is reported to have powers over the elements, even powers to raise the dead?
5. Are there really caves under the surface as Shaver said?
6. Is a person really dead in all sense of the word when they "die" or do all the functions of the mind go on? I don't think you can prove this one, but can you disprove it? I can ask some of the damndest questions you ever

heard, hut ask Shaver about it, he might know.

7. Why do you people call one "crazy" because one does not do something the way the textbook said do it, when the way that one started to do it is simpler?

Here, gentlemen, are some of the damndest questions I could think up, hut which have been popping up in my mind for a long time. I leave you with these to answer. Think you can do it?

Hermann Reedy
R. R. 1
Roff, Alabama

1. Yes.
2. We don't know what they are, but they are real, and they are not the property of any Earth government we know of.
3. Nobody has proved otherwise. And there are several indications that radioactivity in the atmosphere is on the upswing.
4. We don't know anything about this mysterious personage you mention. Perhaps you'd tell us your source of information?
5. Yes. And we'll prove it sooner or later!
6. Your editor can't prove it to you, but he believes himself that what you say is so.
7. Anybody who does not think along prescribed lines is always called "crazy" by those who do not use their minds for anything original.—Ed.

A FRIEND

Sirs:

Forewarned is forearmed. Organized fandom does not seem to like you. I am sending you these papers which I got at the Philcon because I think it is my duty. I have just recently found out about the Shaver Mystery. In my book, a man or theory is innocent until proved otherwise. If your mystery is a hoax, then the fans are justified in campaigning for its removal. On the other hand, I do not want to be one who has had a chance to fight for the truth, if it is the truth, and failed.

Please don't let anyone else see this letter. If a fan should recognize my printing, it would go hard with me.

I want to see the right thing done by this. You are connected with an honorable magazine group. If this thing is a hoax, I plead with you to acknowledge it and apologize for the harm you have done by representing it as the truth. If it is the truth, stick by your guns and fight like you've never fought before.

If you wish to reply to me in your letter column, call me Paula.

A friend

Thanks for your letter. For sending us this thing, you run the risk of it "going hard with you"? Well, we, personally, wouldn't belong to an organization like that. The Gestapo went out

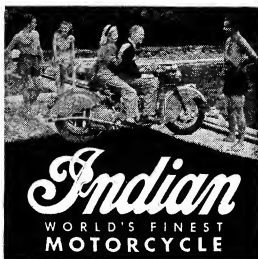
with the Nazis. Why are you a member of a group that would deny you free speech, or would want to conceal a document such as theirs? So they oppose us? Well, we welcome opposition. And now that we can prove the Shaver Mystery to be true, what will their stand be? Read the coming issues for that proof—and then ask the group of fans to draw up a new document. It'll be necessary to save face.—Ed.

RESOLUTION CONCERNING THE LEMURIAN POLICY OF AMAZING STORIES

As readers of fantasy fiction we necessarily have a high degree of tolerance for the seemingly improbable, and believe possible many things which the average citizen would consider too wildly improbable to notice. We know very well how often the progress of events gives the lie to a judgment of "highly unlikely" based on a conservatism of imagination rather than a fair appraisal of the data.

At the same time, as devotees of science-fiction, we believe that the methods of science are the means of discovering what is true. The scientific method includes all avenues to knowledge, and indicates the relative weight which is to be attached to different types of evidence, as well as the permissible inferences from evidence, according to the best judgments of the human mind. Anyone who accepts bad evidence in preference to good, because he is more attracted by what the bad evidence seems to show him, is to that extent a fool.

The present policy of AMAZING STORIES magazine would make fools of all science-fiction readers. The Shaver myths and related absurdities are conceived in an anti-scientific spirit, and can only be entertained by a suspension of scientific skepticism. Such published material represents a serious threat to the mental health of many people, which is of concern to us all. Nevertheless it is attractive to a large audience, including many impressionable youths who may by it be prevented from learning to think straight. It encourages superstition in readers of all ages. To be a Shaverite expert requires far less of painful education and training than to be a scientific expert. And the picture of the world which emerges through the methods encouraged by AMAZING STORIES has the advantage which ever attaches to superstition, because the superstitious world-view seems right to man in a state of nature, and the scientific world-view does not. Constant vigilance is necessary to conserve as much as has been gained of Scientific knowledge. In Richard Shaver's mythology the forces of good and evil (hypostatizations of what men do and do not desire) are dramatically arrayed against each other as contending armies, the teros and the deros, and the outcome of their struggle is the most serious issue in the world. The manifestations to humans of the powers of these contenders come in a form identical with the usual delusions of the mentally deranged. The



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signs are most likely to come to thwarted little men; excuses are provided for all their failures, and the individual involved is elevated into a terribly important role in the affairs of Earth.

It is handicap enough to mankind that scientific knowledge is incomplete. The use of fallacious theories in personal and social life means acting as if the world were other than it is. Insofar as errors affect the result, action taken in reliance on such fallacies necessarily leads to failures and disappointments, and an overlooking of real threats to the welfare of one and all. The errors introduced by superstitious beliefs are even more dangerous than those introduced by the incompleteness of scientific knowledge, because superstition is more closely connected with pursuit of happiness.

We would not be heard to assert that beliefs now accepted by scientists are necessarily true, nor that laymen have no right to call the experts into question. What we do hold is that a layman, in the field of chemistry, physics, history, et cetera, unless he is willing to go into the evidence and logic used to reach conclusions from it, must accept as premises any doctrine which may fairly be said to represent the substantially unanimous opinion of specialists on the subject.

We are not impressed by the argument that the financial success of the Shaver stories proves there is something to their mythology. We doubt that anyone would deny there are a hundred thousand, and many more, crackpots in the United States and Canada. The majority opinion of a lunatic fringe is no guide to truth.

From the outset of the Shaver business there has been and is now an attempt to coerce, cajole, or bribe the organized fantasists into assuming a share in the management of the Lemurian movement, spreading its poison and intensifying the harm to those already affected. We have rejected, and mean now to reject conclusively, all such overtures. We do not want to enlarge our numbers by accretions of insanity. We consider the so-called "Shaver Mystery" fit only to oppose and to satirize. We detest its tendencies, we want no part of it. On the contrary, we would be advocates of science's description of man and the world as the best working hypothesis.

We will be happy to meet the advocates of streamlined superstition in the forum or in the courts. As long as they do not supply an occasion for such testing, we shall continue to use against the ideology the instruments by which it is advanced, a free press and free speech. We will seize opportunities to publicize our denunciation of this perversion of fantasy fiction, and will seek to discredit not only the Shaver myths, and its method but also the motives of those who advance it for money and the rationality of those to advance it from conviction.

Alternate Resolution

Resolved:

That organized science-fiction fandom as represented by those delegates assembled at the Philcon

on this first day of September, 1947, at the Penn-Sheraton Hotel, Philadelphia, Pennsylvania, recognizes the following popular magazines as presently publishing science-fiction and fantasy of considerable merit and occasionally of enduring value, and as pursuing ethical and editorial policies of honesty and repute:

Well, readers of AMAZING STORIES, here's the official stand of "fandom," our honorable opponents of the Shaver Mystery. We present it as they wrote and voted on it in their convention. We don't know the results of the voting, but we'll wager AMAZING STORIES wasn't on the list!

As to the statements in it: we consider the following statements to be untrue:

We are trying to make fools of all science fiction readers . . . we are mentally deranged . . . we are thwarted little men . . . the financial success of the Shaver Mystery proves there is something to the mythology . . . it is a mythology . . . is now an attempt to coerce, cajole, or bribe the organized fantasists into assuming a share in the management of the Lemurian movement . . . that these fans are sane and we are not.

We also deny that these fans known as fandom have any right to represent science-fiction, especially the magazines which lead the field, AMAZING STORIES and Fantastic Adventures.

We further object to this group trying to coerce, cajole, or bribe AMAZING STORIES readers, authors and editors into assuming a share in the idiocies of such fanciful and wild imaginings of science as they endorse, which are not only unentertaining, but contrary to known facts.

Lastly, we insist on our right to a free press and our own opinions. And we consider an organized effort to deny this right to us an imposition on our rights as outlined in the Bill of Rights. Imagine offering to take us to court for the express purpose of outlining our right to believe in the Shaver Mystery!

Further, we offer to take a mental test, resting our case on the results, provided the members of fandom take a similar test. If that is what they call proof! The Shaver Mystery is untrue because we are insane! What logic. We are sane, we can prove, and we believe that therefore fandom has, by their document in Philadelphia, endorsed the Shaver Mystery.—Ed.

THEIR GLASSES DO NOT CHIP FASTER

Sirs:

Like you, I have had the interesting experience and the great responsibility of being an editor. Therefore, I know the power of the printed word and the damage that can be done to a person or a product by erroneous information which occasionally gets into publication.

I don't for a moment suspect that you had any doubt of the veracity of the material used in your editorial on drinking glasses which appeared in the September issue of AMAZING STORIES, but I can

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A STRANGE DREAM

Sirs:

Although I read your story "So Shall Ye Reap" some time ago, it took the enclosed newspaper clipping to jolt me into action. I can't say that I enjoyed your story—it's entirely too probable that such a situation exists for any person to read such a story and not feel serious forebodings. In fact, I felt so upset for several days after reading the story, that I just about decided to swear off science fiction for good.

Perhaps you'd like my reaction as I read the story. The more I read, the more horrified I felt. The story was entirely too plausible for comfort. My knowledge of nuclear physics is limited to what I learned in a college course in general physics and from outside reading, but the reasoning of your characters did not seem to conflict with what knowledge I do possess. I almost gave a sigh of relief when you brought in the discovery of the bones of the goat-men. This was more like the work of the average pseudo-scientific hack writer, and so I reasoned that I might be able to discredit the scientific plausibility of the preceding section of the story. However, upon reading the editorial comment in "The Observatory," I was again beset with doubts after reading the remarks "... don't pass it (the story) up as the work of just any old hack writer because Rog Phillips (no, that isn't his real name) is not even a writer. He can write, and does, but he's really a top modern scientific mind, and he's telling us things

through fiction that we ought to know, but the rest of the world has neither the knowledge nor the guts to tell us." I wondered then if the supernatural aspects had been deliberately introduced to throw off the average reader.

I must disagree with you on certain points of your story. Your characters reason that the truth cannot be safely disclosed to the general public because of the wild scramble that would ensue when people attempted to save their own children. I think you are wrong in assuming that the majority of the people would fight for the privilege of being members of your underground community. If there were no immediate danger to them or their children, most people, in my opinion, would prefer to remain at the surface; with the materialistic philosophy that seems to predominate in the world today, as I guess it always has, most people would prefer to die rugged individualists at the surface than live as unselfish and cooperating members of an underground community. Thus far in history people have shown little regard for the welfare of their descendants—witness the ruthless cutting down of our forests and stripping of our natural resources. In the midwest today land is being planted to wheat that should have been left in pasturage in spite of the warnings of the Department of Agriculture that a potential dust bowl may be in the making if there is an extended period of dry weather. And in our everyday lives, consider how few people there are who will bother to save their old newspapers in spite of frequent reminders that there is a world-wide shortage of lumber. I, myself, continue to purchase paper napkins and towels and other unessential paper products, even though I realize that by doing so I am contributing to the further destruction of our forests.

Further, taking my acquaintances as perhaps an above average group, since most of them have college educations, I find that very few actually believe that an atomic war would mean the end of civilization in spite of the warnings of our leading scientists. Therefore, why should they be any more inclined to believe those same scientists if they brought forth the theory expounded in your story? However, if such a wild scramble as you envision did seem to be shaping up, a gigantic national lottery would probably be the answer. Just as the American public accepted the lotteries of selective service, so would they accept a lottery for this purpose. Those families accepted in the lottery could then be given psychological tests to weed out the hopelessly incompetent.

Perhaps I am more inclined than the average person to believe that such a situation as you describe actually does exist because of a very strange dream which I had on July 16, 1943—just two years before the exploding of the first atomic bomb.

I was lying in the delivery room of the hospital. The doctor had administered a caudal block, a type of spinal anaesthesia used for childbirth

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with which the mother experiences no pain but remains completely conscious. It takes a few minutes for such an anaesthetic to take effect, and since I seemed to be in some pain, the doctor decided to give me a little ether until the caudal block took effect or perhaps because he wanted to slow down the birth somewhat. So the ether was administered and my mind went drifting off into the land of the subconscious.

I lost my own personality somewhere along the way. It seems there was a man who dominated my dreams. I did not think I was this man, but still I knew what he was thinking—I experienced his emotions. He seemed a very learned man, a physicist or mathematician; in fact, his was a sort of super intelligence far greater than any other human being's.

It is this super intelligence which brings his despair, for he has come to the sudden realization that the world is about to end through his own fault as he has made an error of one in his mathematical calculations. "How ironic," he murmurs to himself, "How ironic," with wry scientific humor. Then the full realization of what he had done or failed to do overwhelms him. He becomes frantic. The names of other scientists occur to him. He knows they are involved in this destruction of the world which is about to occur, but he also realizes that he alone has the intelligence to comprehend that the world is about to end. If they could only understand too, they could do something about it before it is too late. But, "They don't understand. They don't understand," he cries. Then he realizes that it is too late—there is nothing that can be done, by him or anyone else. There is nothing beyond. This is the final era. He is engulfed by the most horrible feeling of despair. The seconds tick by. The world is about to end.

I could stand it no longer. I snapped to full consciousness. (Or so it seemed; the ether coincidentally wore off at that moment, probably.) "Don't give me any more ether," I gasped. "I don't want any more of that horrible dream."

And then a few minutes later my first child was born. I heard her first thin little cry. They let me see her immediately, still covered with mucus and amniotic fluid. With what a happy feeling of relief I realized that it was the beginning of a new life and not the ending of all life.

So you can see why your story made such a deep impression on me. I too have felt that awful feeling of complete despair which Dr. Topanov must have felt when he discovered the error he had made, the one factor which he had overlooked.

E. Ione Buie
4443 Burns Avenue
Los Angeles 27, Calif.

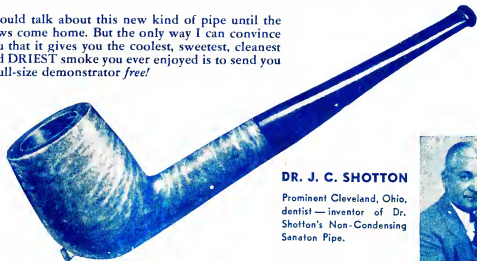
Your letter hardly needs any editorial comment, and we thank you for a very fine contribution to Discussions. Your viewpoints are as interesting as your dream, and we, with you, hope the dream is not realistic.—Ed.

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What This "Demonstrator" Must Prove

Dr. Shotton's non-condensing Sanaton pipe is now being enjoyed by nearly 100,000 pipe smokers—all of whom bought it after *trying* it! Some of these fellows have been smoking pipes for 30, 40, or even 50 years. Some have from 50 to 200 pipes in their collections, and they like the Sanaton better than all the rest put together! There must be a *reason*, and here it is:

Most ordinary pipes, as you know, are equipped with tubes, traps, filters, baffles and gadgets of all kinds whose purpose it is to catch and hold "goo." However, Dr. Shotton *knew* that these gadgets actually caused *condensation* of the "goo" they collected—just as a cool pitcher of ice water in a warm room causes moisture to condense on the outer surface of the glass! He realized that the *real secret* of a dry, sweet pipe is to *prevent* "goo" from forming at all!

Now, what did Dr. Shotton do? Well, instead of placing a catch-all gadget in the Sanaton pipe, he placed a small slotted tube at the bottom of the *bowl!* This tube acts as a NON-condenser, for as you light this pipe, the tube warms up—and there's no cold surface on which "goo" can condense! No condensation, no "goo"! It's as simple as that!

Then Dr. Shotton went a step further. He extended the non-condenser tube *through* the back wall of the pipe and attached a tiny removable screw. Whenever you want to clean out the *tar* that results from tobacco *combustion*, just remove the screw and run a regular pipe cleaner through from end to end. The Sanaton cleans like a gun!

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As I said before, I don't expect you to buy my regular Sanaton until you try my demonstrator with its non-condensing and easy-cleaning features. So I'll send you a demonstrator *FREE!* (I just send 10c to help cover postage and handling.) Then if I don't hear from you within two weeks, I'll send you one of my *genuine imported briar* Sanatons and you can pay for it when it arrives. But—if you don't like the way my Sanaton *demonstrator* smokes—if you don't find it to be the driest, sweetest, cleanest and coolest smoke you *ever* had, just tell me so and I'll cancel your reservation. Isn't that a fair and square proposition?

Be sure to tell me whether you want me to reserve a Regular Sanaton at \$2.50, DeLuxe Sanaton at \$3.75 or Sterling Sanaton at \$5.00. All my Sanatons are made of genuine aged imported briar—the only difference is in the quality, grain and finish. Be sure to let me know whether you prefer a large, medium or small bowl. (Only one demonstrator to a person, please.)

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- | | |
|---|--------------------------------------|
| <input type="checkbox"/> Regular, \$2.50 | <input type="checkbox"/> Small bowl |
| <input type="checkbox"/> De Luxe, \$3.75 | <input type="checkbox"/> Medium bowl |
| <input type="checkbox"/> Sterling, \$5.00 | <input type="checkbox"/> Large bowl |

Name

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NOTE: If you want your genuine briar Sanaton at once, enclose remittance and I'll send it along with the demonstrator, prepaid. Smoker the demonstrator—and if you don't like it, return the genuine briar Sanaton unsmoked for refund. For your courtesy in remitting with coupon, I will include a big bunch of extra long pipe cleaners free.

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On the night of February 5, 1910, at 11:45 P. M., Mr. F. H. Whitney of Everett, Washington, witnessed a gigantic, glowing, golden disk about four miles north of Greer, Idaho, on the Clearwater river. This disk was not less than one-half mile in diameter. It was obviously intelligently piloted down the valley. Was it a visitor from space?

